AMERICAN GAS ASSOCIATION MONTHLY

SEPTEMBER · 1934

Taking the Convention Home

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The Outlook for Gas Ranges

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Ford Motor Company Uses Gas Furnaces — J. B. NEALEY

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Safety Factors Involved in Change-Over — J. B. CRAVEN

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Water Heater Manual

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AMERICAN GAS ASSOCIATION

420 Lexington Avenue
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AMERICAN GAS ASSOCIATION MONTHLY

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Night view of Atlantic City's magnificent auditorium, focal point of the nation's gas industry during the 16th Annual Convention and Exhibition of the American Gas Association, October 29th to November 2nd.

AMERICAN GAS
ASSOCIATION
MONTHLY

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James M. Beall, Editor

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Taking the A.G.A. Convention and Exhibition Back Home

IT requires six months of preparation to build and stage a national convention and exhibition, and it is all over within the brief space of one week—or, rather, it used to be. The belief that a convention, when once adjourned, is as dead as yesterday's newspaper is no longer shared by the leaders of our industry. Even at this early date plans are being made by many companies to have their delegations carry the story of this year's convention and exhibition back home to the rank and file of their organizations or at least to the department heads and junior executives.

Briefly, there are two reasons why the forthcoming meeting at Atlantic City, October 29 to November 2, is of special interest to the entire personnel of the gas industry.

Interest in Exhibition

In the first place, the manufacturers of equipment and apparatus will put on their only exhibition in three years —a period during which many revolutionary improvements have been made in structure, design and utilization. Every employee in the industry would benefit materially by seeing this exhibition in person, but since this is impossible the next best thing for those who must stay at home is to learn of the latest developments from those who have been present and have seen with their own eyes.

Accordingly, a number of companies are sending delegations of employees to the convention with detailed instructions to uncover the latest advances and scientific refinements in the appliance and apparatus fields and report back on these to their employee organizations.

Official Observers Appointed

In some companies, this report will take the form of a carefully prepared analysis of everything that is new in the appliance field, with particular emphasis on those appliances which the company in question is most interested in promoting. In other companies, two or more delegates (known as Official Observers) will give talks before meetings of employees, describing the exhibition in detail and forecasting what the trend in appliance design will be for the immediate future as judged by the Atlantic City display.

Many of the companies whose bookkeeping and billing operations are largely mechanized or about to be made so, will, as usual, receive a complete picture of the accounting exhibit from representatives of their accounting departments. Sales managers, industrial gas engineers, home service workers and others connected with the commercial end of the business will pay more attention to the gas industry's "style" show this year than ever before. An exhibition which features in one place, at one time, a three-year history of appliance and apparatus improvement surely merits the broadcasting that companies already have planned to give it throughout their organizations.

The second reason why this sixteenth annual convention should be interpreted to the thousands of employees who will be unable to attend, is the excellent program itself. Speakers and topics selected for the general and sectional sessions are in keeping with the best traditions of past conventions. The program has been built to order for the individual gas man and his specific problems, in terms of the extraordinary conditions of today. Every paper, report and address deals with important problems, endeavoring to set forth practical solutions that are fundamentally sound and capable of being successfully applied on the job.

"Covering" the Sessions

Again, as in the case of the exhibition, companies will assign members of their delegations to "cover" the business sessions and report back to their fellow employees. In some instances detailed reports will be prepared embracing the latest sales promotion ideas, progress in combating the persistent gum problem, rate making, research, new methods of selling industrial gas, and a host of other live

subjects. Accompanying these reports will be a general over-all picture of the entire convention, including a summary of the views of others on leading issues of the day, and, by no means of least importance, an analysis of prevailing sentiment within the industry as reflected by those in attendance.

In this manner, company members of the Association have discovered that it pays to bring the convention back home to those who cannot attend. The employees themselves benefit directly because of it, interest is aroused in the printed reports and they are read by more employees than would otherwise be the case, and management has the satisfaction of knowing that it has kept its personnel advised of the best current thought in the industry as well as the latest advances in appliances and apparatus.

Methods followed by The Peoples Gas Light and Coke Company, Chicago, and the Consolidated Gas Company of New York, in interpreting the convention to their employees are described by Winfield Foster, publicity assistant of the Chicago company, and Howard F. Weeks, assistant director of the Editorial Bureau of the New York company. Mr. Foster reports as follows:

How Chicago Does It

Approximately two hundred superintendents and department heads—the entire management group—of The Peoples Gas Light and Coke Company will hear the speeches and committee reports made at the 1934 Convention of the American Gas Association.

This does not mean, of course, that the entire number will be in Atlantic City during the week of October 29th. It refers instead to the benefits of a system used by the company of covering the convention and reporting the highlights to general meetings of superintendents and department heads at the company's offices.

On two occasions in the past this system has been employed with such good results that it will again be used in 1934. This is how it was done:

The company's delegation to the convention was selected to represent all of the company's main divisions. At a meeting held before the convention, and using an advance program, each delegate was assigned to cover the sectional meetings concerned with his line of work, with a view to making a complete report on these meetings on his return.

In addition, all the delegates were, of course, present at all general sessions, and wherever possible a specific talk at one of the general sessions was assigned to the delegate who could best report it.

Dinner Meeting Held

Upon returning from the convention, arrangements were made to hold a dinner meeting of superintendents and department heads, numbering about two hundred, at which brief abstracts of the more important talks and committee reports were given by the delegates.

It was found feasible to "cover" the convention in this way in a meeting which convened at 6:00 P.M. and adjourned at 9:00 P.M. with two hours devoted to reports.

In addition to this general meeting, a number of divisional meetings were held at which each delegate presented topics of especial interest to his division; further, many of the printed convention addresses, papers and committee reports were made available in this way.

This system of reporting conventions has resulted in a double benefit: First, it has clarified in the minds of those attending the convention the subjects which they heard discussed there; and secondly, it has given to the management group of The Peoples Gas Light and Coke Company a condensed version of the convention, with the additional advantage of having the convention interpreted for them in terms of the company's specific problems.

An indirect benefit resulting from this plan has been the active interest on the part of superintendents and department heads throughout the company organization in getting and reading the copies of addresses, papers and committee reports which the company library keeps on file. Reporting on these, and summarizing the high points of the general sessions have aroused the interest of those present in learning more about the subjects presented.

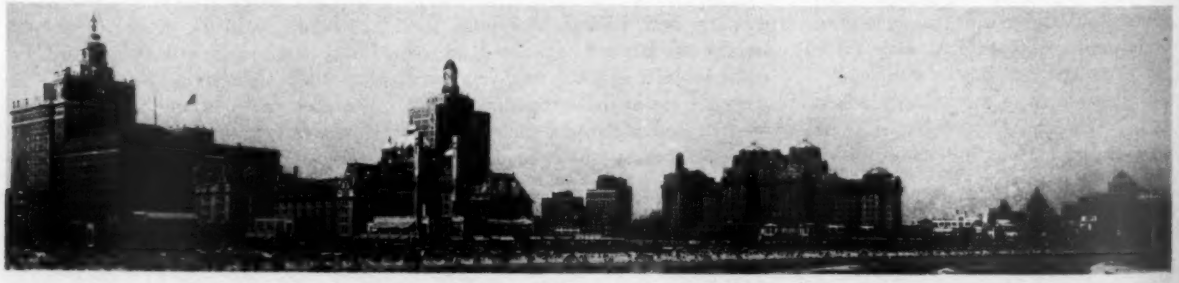
How New York Does It

Reporting in behalf of the Consolidated Gas Company of New York, Mr. Weeks says:

All companies have an equal opportunity to "bring the convention back home." The small company, as well as the large company, can "cash-in" on the full value of the exhibition and the meetings, and keep all of its employees posted on the progress made by the industry at large.

The Consolidated Gas Company of New York has evolved a program which is flexible in operation, and which has proved to be effective. This plan, which provides directly for the dissemination of convention news to all who are interested, has three distinct phases:

1. Written reports.
2. Meetings of employee organizations.
3. The employee's magazine.



Panoramic View of Atlantic City's Hotel Skyline

In most cases, all employees who are sent to the convention are required to submit a brief report on certain phases of what they see and hear. Some companies carry this to the extent of organizing the convention delegation beforehand and giving out definite assignments. The Consolidated Gas Company has adopted this method, but each department head exercises discretion as to the extent and scope of the required reports.

This method is only one way of accomplishing the job. It appears to be particularly adaptable for the more technical aspects of the business since it enables the engineering, chemical, and allied departments to get a complete synopsis of the meetings and reports in which they are especially interested.

Using Employee Groups

The Consolidated Gas Company also uses the existing employee organizations to give the members of these groups a résumé of the convention and exhibition high spots. The engineering, commercial and accounting societies within the company meet on the average of once a month, with programs devoted to the problems of these particular departments.

In the past, the November meetings of these groups have been devoted largely to a consideration of addresses and reports given at the convention.

Another method of "bringing the convention back home" is by using the employee magazine, or house organ. *To Serve New York*, the monthly employee publication of the Consolidated Gas Company devotes a large portion of its November issue to a carefully prepared review of the convention. This phase of convention reporting can be made especially attractive and valuable, with photographs and written impressions by some of the delegates, and other high spots of general interest.

It is of particular interest to note what the Utilization Department of the Consolidated Gas Company does in getting the maximum value from the exhibition. Prior to the convention, the representatives of this department who are going to attend are formed into groups and each individual is given a specific assignment. When they return from the convention, they prepare detailed reports which are in turn carefully studied by virtually everyone in the department.

It is quite obvious that any plan for capitalizing on convention attendance must provide for a comprehensive review of the exhibition, for it is one of the most significant features of the entire convention.

There is nothing startlingly new about any of these methods, and all companies regardless of size, can follow the same procedure, with only slight variation. Each method will prove effective, and each has its own distinct advantages. However, it is felt that by using a suitable combination of all three plans, most companies will gain certain advantages that will make the extra effort involved worth while.

Live Topics for Atlantic City Convention

ACCOUNTING

Comparative Practices in Transmission and Distribution Accounting. Coding Systems for Accounts. Wage Incentives for Collectors. Billing Machine Developments. Distribution Strip Accounting. Control of Customer Accounting Procedures. Effect of Credit and Collection Policies on Customer Relations. Management's Responsibility in Employee-Customer Contacts.

ADVERTISING

National Advertising Sometimes Versus Regional Advertising Now. Advertising in Competition with Government Sponsored Business. Selling Industrial Gas by Direct-Mail Advertising. Promotional Possibilities of the A. G. A. Laboratory Seal.

HOME SERVICE

Newer Knowledge of Meat Cookery. Latest Developments in Laundering Methods. Home Demonstrations. Girl Scout Classes. Home Service Plays. School Cooperation. Regional Meetings—Pacific Coast and New England. Consumer Standards. Public School Contacts.

INDUSTRIAL GAS

Ceramics and Potential Market for the Gas Industry. Process Air Conditioning and Low-Temperature Drying. Market for and Promotion of Retail Industrial Gas Sales. Furnace Atmosphere Control. Effective Saving of Gas Fuel by Use of Insulation Refractory Materials. Light Fuel Oil Competition. Instances of Unusual Applications of Gas Fuel. Restaurant, Hotel, Food Preparation and Control Devices. Competitive Situation and How To Combat It in the Small and Large Bakery. The Modern and Improved Hotel and Restaurant Appliance. Dealer Cooperation.

NATURAL GAS

Patrolling of Natural Gas Pipe Lines by Airplane. High Calorific Manufactured Gas for Peak Load as a Supplement of Natural Gas for Emergency Service. Compressor Station Problems. Internal Corrosion of Pipe Lines. Natural Gas Fellowships. The Commercial End of the Gas Business.

SALES PROMOTION

Government Competition in the Domestic Field. Gas Industry and Home Modernization. Why a Major House Heating Campaign—Its Advantages and Results? Sales Development Plans. Air Conditioning with Gas and Its Possibilities. What a National Campaign Like the Blue Vase Contest Can Do for the Industry. Developments in Water Heating Sales Methods. Cooperative Range Campaigns—On the Pacific Coast with Clock-Controlled Ranges, and in the Chicago Area.

TECHNICAL

New Meter Repair Shop. Status of Pipe Corrosion Research. Review of Developments in Distribution. Tar Emulsions. Review of Developments in Gas Production. The Most Recent Developments in the Gum Problem. Gas Analysis in a Study of Water Gas Operations. Features of Heavy Oil Operation. Chemical Developments in the Gas Industry.

GENERAL SESSIONS

The National Economic Situation, by Neil Carothers, of Lehigh University. The Manufacturer, the Utility and Dealer Relations, by George E. Frazer, of Chicago, counsel for the Gas Appliance Institute. Selling Industrial Gas, by F. T. Rainey, new business manager, The Ohio Fuel Gas Company, Columbus, Ohio. Where Public Utility Regulation Stands Today, by Hon. Richard T. Higgins, president, National Association of Railroad and Utilities Commissioners. Other speakers and topics will be announced later.

The Outlook for Gas Ranges*

THE recent announcement in *Retailing* of the 360 per cent sales gain in electric ranges for the first five months of the year brought in its wake a quick flurry of trade comment and speculation. Gas range manufacturers and dealers were especially prone to eye the situation with an aroused attitude. Did this data throw into relief an inevitable battle that some have felt must eventually take place between the gas and the electric industries as to which will be the dominating factor in the nation's cooking?

On the other hand, there are those who feel that such a sentiment is overdramatic and just a trifle farfetched. There are still thousands upon thousands of homes in which the most antiquated methods of cooking are employed. Neither gas nor electricity rule here. Why squabble among themselves when there is so large a virgin market yet at hand, besides a rich and growing replacement market?

The progress of the Tennessee Valley Authority program is seen by some as placing the gas industry on the defensive. The entire TVA goal is succinctly summed up in the legend, "Toward an Electrified America." Naturally, the electric range is receiving considerable impetus in the TVA area, especially as the Government has found that it is an important load builder and can account for a large consumption of "juice."

Retail Inertia

In the meanwhile gas range manufacturers, proud fathers of a vastly improved product, bemoan the inertia of the retail craft which is making practically no effort to advise the public of the great many refinements and conveniences the 1934 models contain. Price and just price again remains the one cogent sales argument that the average dealer can apparently wield.

In the opinion of one close observer of the scene what the gas industry needs is a unified, concerted movement to acquaint Mrs. Housewife of the multiplicity of improvements that the new gas ranges contain that makes her present cooking equipment as outmoded as the Model T Ford. Somebody must sing the praises of heat control, perfect insulation, broiler compartments and all the other contributions of recent years in order to awaken that "urge to own" on which all business rests.

Point to Utility

Who is to undertake such a national effort? Both manufacturers and retailers point to the gas utility. The utility, they contend, is the overlord in the picture, with its millions invested in properties, mains, pipings, and so on. It is the utility with its relatively huge resources on whom rests the burden of stimulating gas range sales, it is argued. It is their duty to educate the housewife on these new refinements by means of a joint advertising fund to which all of them will subscribe on a pro rata basis.

Some ideas of the extent to which outdated and outmoded gas ranges continue in use were to be gleaned from the historic drive staged recently in Southern California. In this drive 13,000 gas ranges were sold in two months through a cooperative campaign which correlated the vigorous efforts of utilities, manufacturers and retailers in a manner that is now held forth as a model for a national drive. The average sale in this campaign was $80.55, on which a uniform $8.95 trade-in allowance was granted. It was a study of these hundreds of old ranges that was so revealing—for over 60 per cent of them were immediately designated just "old junk," while the remaining 40 per cent were not really very different.

Replacement Market

In the face of so rich a replacement market the following tabulation, based on figures of the U. S. Census Bureau, is especially significant:

1929	1,600,000
1930	1,400,000
1931	960,000
1932	600,000
1933	720,000

It may be argued that the steep decline in 1931 and 1932 was natural during such depression years. Yet the superior showing of various other items of major home equipment during the same years would tend to disprove this point of view.

It is generally agreed that there are in use today some 15 million gas ranges and that the average life of a gas range lies somewhere between 15 and 20 years. In 1929 the American Gas Association estimated that 80 per cent of the sales were replacements and that 10 per cent went to those who had never before owned a gas range. In the following years the replacement business is estimated to have jumped to 90 per cent.

(NOTE: Whereas in the year 1932 the sales of gas ranges ran from ten to eleven times as many as the sales of electric ranges, in the year 1933 the sales of gas ranges jumped to fifteen times as many as the sales of electric ranges. In that year, 1933, the sales of gas ranges increased 34.7% over 1932, while the sales of electric ranges decreased 17% under 1932.—(EDITOR, *American Gas Association Monthly*).

Here's Business

Yet the housing survey being conducted at this time by the Government shows very clearly in the preliminary data thus far released that there are large numbers of homes still using kerosene, coal, wood, or some other form of heating other than either gas or electricity. Evidently even the initial market still has a large way to go. It should represent more than a mere 10 per cent of the annual sales. The following are typical examples of the Government's reports on various cities and communities:

Cooking Facilities in Dwelling Units

PEORIA, ILL. *Facility*	*Dwelling Units*
Gas	28,142
Electricity	150
Other or none	7,505

* Reprinted from "Retailing," August 6, 1934.

WORCESTER, MASS.

Gas	44,274
Electricity	950
Other or none	23,892

DALLAS, TEX.

Gas	66,043
Electricity	298
Other or none	17,187

BIRMINGHAM, ALA.

Gas	35,987
Electricity	942
Other or none	64,749

SYRACUSE, N. Y.

Gas	59,197
Electricity	336
Other or none	5,613

Where does the retailer stand in all this ado? What is he doing, if anything, to capitalize the gas range market? As a rule he is largely unaware of any special attitude in the matter, especially if he sells other merchandise besides gas ranges. In the department store or furniture store there is little concern over any impending battle between gas and electric ranges. Whichever will lead in sales will receive the chief promotional emphasis and priority in the inventory. In the meanwhile, however, a large market lies fallow. In the automobile field if one-quarter of the ammunition on mechanical improvements were given the dealer they would cause a tremendous stir with their aggressiveness in publicizing this information. Why this inertia among the gas range distributors? The gas utilities are taking the cream of the business, they say. And the utilities answer "If we didn't do the merchandising that we do, the situation would be sad indeed."

An Idea!

Apart from the question of centralized promotion on a national basis, retailers feel there is a crying need for reorganization within the industry to make it conform with the established practices that, for example, have lent so much to the success of the mechanical refrigeration industry.

In an address at the New York-New England Regional Gas Sales Conference, Lee Jalkut, merchandise manager, Gimbel's, New York, said that an ideal set-up for a department store on gas ranges would parallel the electric refrigeration method of selling. Just carry floor samples and let the manufacturer deliver, install and service. In this way, he said, the store could take a lower mark-on, allowing the manufacturers to charge for the service they render.

A common complaint among retailers is that a thoroughly modern gas range is high in price. Most customers shy away from the models priced from $75 up even though they are attracted to them, retail executives assert. If only one could offer them a range with a modern broiler, heat control, insulation, all in a smart design, at around $45, what a business they could do! But manufacturers studying their costs, know full well this is impossible.

The alternative, some think, lies in the stripping of ranges in construction in a way which would retain their promotional features and keep prices down to permit strong promotion at a price.

The AMC group of department stores is said to be pursuing this object at the present time and is negotiating with manufacturers with an order for 5,000 ranges to retail around $45.

Set 'Em Up

The manufacturer in turn accuses the retailer of being too much dependent on price and through an untrained sales force of not stepping-up the range sale for a bigger profit. A specific example is given of a 36-inch range which cost about $28 stripped and about $38 with insulation and heat control. The former retails at about $48 and the latter at $65. By striving to sell the $65 range the retailer can increase his profit on a unit sale about $7, it is shown.

In closing, even apart from all other external considerations, it is held that the average retailer does a very indifferent sort of job with gas ranges on the selling floor. Nothing is done to awaken interest in normal store traffic.

It is common to see ranges sprawled over the floor right next to each other with no attempt to draw concentrated attention. Why not place a range on a revolving platform under spotlights, with a circular arrangement of other ranges about it? There should be a greater use of printed cards so that the consumer in a glance can learn that her present range is probably outmoded. And if as in some cases, where the range section is separated from the store's model kitchen, why not spot several attractive range models nearby?

Appointed to A. G. A. Fellowship at W. Va. University

ANNOUNCEMENT has been made of the appointment of Robert I. Snyder to the Natural Gas Fellowship at the University of West Virginia. Mr. Snyder graduated in mechanical engineering at the University of Michigan in 1932. His practical experience includes seven months with the Childers Drilling and Producing Company near Farmington, New Mexico, on oil and gas well drilling operations and a summer's employment with the Wayne County Road Commission near Detroit, Michigan.

Robert I. Snyder

Since his graduation from the University of Michigan, Mr. Snyder has been employed ten months with the Johns Manville Home Insulation Contractor in Detroit and, in addition, has worked ten months in the research department of the American Gas Association Testing Laboratory in Cleveland, Ohio. At the present time he is employed in the industrial gas research section of the A. G. A. Testing Laboratory.

Mr. Snyder is the son of A. I. Snyder, engineer of the Detroit City Gas Company, Detroit, Mich., who is a prominent member of the gas fraternity.

Reduction in Minneapolis Rates

THE Minneapolis City Council has approved an agreement with the Minneapolis Gas Light Company, subsidiary of the American Gas and Power Company, regulating the company's rates for a period of ten years on a net return basis of $1,250,000 annually. The action will result in a reduction of approximately 9% in rates. The ordinance was passed by a vote of 18 to 6.

Ford Motor Company Uses Gas Forging Furnaces*

By J. B. NEALEY

American Gas Association

For a time there were a number of forge furnaces (about 30) heated with surplus electricity generated in the company's own plant but practically all of these have been converted to gas.—Editor's note.

THE metallurgy of forging has been so developed and improved that today it can be included in the list of exact sciences. The use of refined fuel gas in modern furnaces has contributed much to this advancement. These furnaces are clean, compact and insulated against heat losses and the radiation of heat into the surrounding atmosphere. They are the least expensive to operate including labor, upkeep and fuel, and, as in heat treating, they continuously and exactly reproduce a uniform product of the best quality.

Between 600 and 700 furnaces, fired with gas fuel, are used in the Rouge plant of the Ford Motor Company. Gas is employed in this plant starting with open hearth steel furnaces where the steel is made and soaking pits where the steel billets are reheated for the rolling mills and ending with the heat treating of the finished parts and the drying of paint on the finished cars.

The steel building is shaped like an I with ten open-hearth steel furnaces and 60 soaking pits located along the top cross bar, the rolling mills along the body of the I and forging furnaces and hammers in the lower cross bar. Thus steel comes in a continuous stream, directly from the furnaces, through the different stands of rolls, to the forging division where the billets are formed hot into various parts for the Ford car.

There are three long and parallel rows of forging furnaces with approximately 15 box-type furnaces in each, and a fourth consisting of long continuous furnaces. Hammers are set in between the furnaces leaving a broad aisle between each row for the movement of operators and material. Each row is served with a continuous traveling conveyor which is located just back of the hammers and runs under the furnaces. Onto this, the hammer men throw the finished forgings. These are discharged onto a grid where they are sorted and routed to the various machine shops for finishing. There are also overhead monorail conveyors with baskets for small parts.

Pusher-type continuous gas furnace

Slot-Type Furnaces

Most of these furnaces are of the slot type, ranging around 10 x 4 x 3 feet high and set on 2-foot legs. They are of brick, steel encased and each is heated with a single gas burner equipped with a gas-air proportioner of the inspirator type. A casting projects about 2 feet beyond the furnace at each end of the slot, and a refractory wall rises from the floor to the bottom of the slot, just beyond. The castings and the wall are used to rest the material being heated and the wall also serves to protect the operator from the heat. A heavy cast-iron shield is suspended about 6 inches in front of the furnace and extends from the top down to the upper edge of the slot. A 2-inch drilled pipe, located under the lower edge of the slot, is used to blow the hot air from the furnace up and back of this shield.

A modification of this type is one in which the front is left open and then filled with refractory blocks so spaced as to leave three rows of ten

* Reprinted from "Steel."

holes each. These are used to heat one end of cam shaft forgings preparatory to forming in an upsetter. The floor wall and suspended shield with air curtain are also provided for these furnaces. There are several other similar furnaces, built to heat less stock, that are used for other parts.

Diffusion flame burners have been placed on two or three of these slot-type forging furnaces. The burner is located in one end and the diffusion flame travels the length of the furnace parallel with the slot. On one of these furnaces the burner proper consists of a series of small tubes protruding through an air box into a combustion throat that opens directly into the furnace. The plate of the air box through which the gas tubes protrude into the combustion throat is perforated with multiple ports through which air is forced. This provides multiple and parallel streams of gas and air which burn with a luminous flame. At the hearth line is a series of tubes through which gas alone is forced into the furnace and this raw gas blanket envelopes the steel being heated and protects it from scaling. Hot products of combustion are drawn out at the opposite end of the furnace and passed through a recuperator to preheat the air that is used in the burner.

Car-type gas-fired furnace employed for heating heavy stock for forging and for carburizing big cams. Note heavy cranes and hoists for handling work.

Diffusion Combustion

Diffusion combustion is a controlled luminous flame resulting in a definite and adjustable flame length with a uniform temperature throughout. This process requires alternate layers of gas and air moving in laminar flow with no turbulent action as in luminous flame combustion. The gas and air are mixed by diffusion which follows natural lines so that the rate of mixing is definite and uniform and can be determined for given conditions. Correct proportions of gas and air with complete combustion are possible. Under the conditions of gas and air flow required for diffusion combustion it is possible to have a layer of gas on the bottom of the flame which will completely blanket the work and protect it from contact with the air above. The important distinction between diffusion combustion and luminous flame combustion lies in the difference in laminar flow and turbulent mixing and in their effects on the characters of combustion.

Slot-type gas-fired forge furnace in which slot is covered by a refractory block wall with 3 rows of holes for the stock. This increases the capacity of the furnace and reduces the escape of heat.

A feature of the forging furnaces in this plant is the use of a dolomite bed to protect the hearths. Prior to this the hearth brick disintegrated so fast that they had to be replaced at the end of each shift. Now from 2 to 2½ inches of powdered dolomite is laid on the hearths and so protects them from slag and heat that they stand up from three to eight months. The dolomite absorbs the slag and is usually changed every two weeks. The steel can be placed directly on the dolomite bed while being heated as the dolomite is perfectly dry and does not adhere.

Steel is forged on an initial heat approximately 2100 degrees F. with an

allowable range of 100 degrees on either side. When several forging operations are involved the temperature drops rapidly and some jobs are reheated. The lowest temperature limit allowed is about 1650 degrees F.

A number of continuous forging furnaces of the chain and sprocket type are included in the equipment of this division. One of these, which is employed in heating stock for the radius foot, is 15 feet long, 4 feet wide, and 4 feet high and sets on 3-foot legs. It is provided with a motor-driven loop chain conveyor, which operates below the hearth. Spindles 18 inches long, bolted to the chain on 6-inch centers, protrude through a slot in the hearth and the work is carried through the furnace on these. This method eliminates heating of the chain and thereby prolongs its life. Heat is supplied to the furnace through four gas burners on each side, located in the front half (discharge) and the conveyor extends 4 feet beyond the charging end for loading. Another operator removes the hot stock from the discharge end with tongs and places it directly in the press. Two similar furnaces which are parallel and built so as to form a single unit have a chain conveyor running through the space between. Front axles are so carried on the conveyor that each end protrudes into a combustion chamber and is then heated for forming.

Automatic Control

An automatic control is also a part of the equipment of this furnace and with this the temperature is mechanically maintained at any desired degree. Most of the burners in these furnaces are supplied with proportional mixers (gas and air) of the venturi type, gas being furnished at 15 lbs. pressure and the inspirator is set to draw in whatever volume of air is desired. With this device any desired furnace atmosphere, reducing, neutral or oxidizing, can be obtained and from then on is automatically maintained regardless of the volume of work passing through or the amount of fuel being burned. The temperature controller consists mainly of a thermocouple in the furnace and motor-operated valve in the gas supply line. When the temperature rises above the point set on the indicator the motor of the valve is energized and closes off the fuel supply to the burners and conversely when it drops below this point, it operates to reopen the valve.

Similar furnaces used for normalizing these forgings ranging up to 20 feet in length and similarly controlled, are located nearby. For cam shafts one of these furnaces is equipped with 4 chain loops and plates are bolted onto the tops of the spindles. In this manner two rows of cam shafts pass through continuously. The other furnaces are used interchangeably for different types of work.

Mechanical Normalizers

Normalizing furnaces of the pusher type range up to 25 feet in length, are 6 feet square in cross section, and are heated with 4 gas burners on each side, over-firing the work. The forged parts are carried through in alloy trays riding on water-cooled skids (pipe) which protrude 7 feet beyond the charging end for a loading table. An overhead rail with chain hoist, runs along one side of the furnace and is used to return the trays to the loading table. The pusher is operated with a motor, cam and link device. The heating period is regulated by adjusting the frequency and length of stroke.

Another forging division is located in the Spring & Upset Building where heavy die blocks and other parts requiring crane handling are heated and formed under giant hammers or presses running up to 2000 tons capacity. A battery of car-type furnaces is employed in the heating of large billets, the cars being run out on tracks and the billets loaded onto them by crane. These furnaces are all of brick construction, heavily insulated and encased in steel. Each is approximately 16 feet long, 12 feet wide and 8 feet high and is heated with three gas burners on each side, or six in all. The front is closed with a counter weighted door and the car is operated on the track with a motor-operated rack and pinion located between the rails. The car top is of firebrick to form the hearth and is sand sealed with the walls so that no heat can penetrate through to the tracks and wheels below. Waste products of combustion are exhausted to a stack through ducts and an induced draft from a motorized fan.

Loaded and unloaded with a heavy mechanical billet handler are two billet furnaces of the same size and construction as those described except that no cars are used, the hearths being stationary. These are so set as to form the two sides of a square and the track for the billet handler is laid past one and up to the door of the other. This billet handler is motor-operated both as to its movement on the track and the head holding the billet. This head can be moved about a horizontal circle, up and down and into and out of the furnaces. After heating it transfers the hot billet to a thousand-ton steam hydraulic press.

Close by is a battery of from 15 to 20 slot type forge furnaces for heating smaller stock. These are of brick and steel, each being about 6 feet deep, 6 feet high and 10 feet wide, the slot running the length of the long side. Heat is supplied with a gas burner in each end overfiring the work, and each equipped with a counter weighted door. A steel apron is provided in front as an aid in placing the stock to be heated.

Other Type Furnaces

A combination of two types, slot and continuous, is used for heating one end of cam shaft stock that is to be upset in an Ajax header, which is directly adjacent. This furnace is 9 feet wide, 4 feet deep and 5 feet high, and has a slot running the entire length of the long side. Heat is furnished through a gas burner located in each end. Directly in front of the furnace and slot is an endless loop chain conveyor, motor operated, and at an elevation that will permit the ends of the steel placed on it to protrude into the furnace, through the slot, as it rides along on the chain. An operator with tongs continuously transfers the hot stock to the header where the end is upset.

Some of these parts are then normalized in continuous, pusher type furnaces which are about 14 feet long, 7 feet wide and 5 feet high. These have alloy rails on the hearth for the work to ride on and the parts are pushed through by a pusher head operated by motor through a cam and link mechanism. The hearth extends 4 feet beyond the charging end for loading

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Safety Factors Involved in Changing to Mixed Gas

By J. B. CRAVEN

Chief Operating Engineer, The Peoples Gas Light and Coke Company, Chicago, Ill.

A CONTEMPLATED change in the general type of gas supplied to any community involves many considerations relative to the suitability of the proposed gas for customer use and safe and proper methods for replacing the old gas with the new.

These considerations involve extensive thought and research on the gas or mixtures of gas most suitable and economical for that particular locality; studies of the proposed new gas, to determine combustion characteristics and how properly to change the multitudinous varieties of gas-using equipment to properly utilize the fuel.

Certain safety angles must be kept in mind throughout the entire study and they must be studied thoroughly, so that no undue hazard be introduced because of a change in service.

All utility companies have been particularly attentive to the safety of their employees and their customers. Every selfish motive would so dictate, but in our utility training and contact, we believe that such policy is highly humanitarian in its inception. No other class of business enterprises gives more attention than utility companies do to all that makes for safe and satisfactory service.

A survey of the safety factors governing a change in a particular community from manufactured gas, both coal and carbureted blue, to a mixture of coal and natural gases may be of interest. In this brief résumé, only safety phases of such a change will be given.

Preliminary Gas Analysis

Long before any definite time was set for such a change, engineers and other scientific men began work with mixtures of coal and natural gases approximating the mixture found economically necessary for the community and they checked certain qualities of the gas, which might affect customers.

They examined the mixture to ascertain the presence of sufficient odor to make any leaks on gas properties, along the distribution system and on customers' premises, readily detectable and thus minimize any hazard to persons and property. If the odor of the proposed gas is insufficient to provide such protection, it can be odorized with one of a number of procurable odorants.

The engineers checked the proposed gas for the presence of sufficient moisture and oiliness to keep line joining materials and meter packings, etc., from drying out and thus contributing to more leaks and possible hazards. Whenever a deficiency of moisture or oily matter is noted, steps are taken to inject steam and oil fog into the gas stream.

They considered the percentage of toxic constituents of the new gas and it may be of interest to know that invariably any use of the natural gas in replacement of or admixture with coal or carbureted blue gas leads to a lower toxicity. In other words, natural gas or its mixtures can be breathed with greater impunity.

The research then was directed to the feasibility of adapting gas burners to satisfactorily use the proposed gas and innumerable tests were made to determine the comparative excellence of combustion. Burners were subjected to far more severe conditions than could ever be expected in practice to discover tendencies towards poor combustion or flash backs. Carbon monoxide would be liberated in either case and might or might not be detrimental to human welfare.

Employee Training

During the later stages of this research, a group of men was recruited and trained for the change-over work. Primarily, all spare gas company men who were experienced in gas handling were listed and then selections of outside men were made. Over ten thousand applications were received and this large list permitted the selection of a relatively small group of mechanically trained high-grade men.

The entire group of seventeen hundred men was given specific and intensive instruction in the training school. This course consisted of actual work on a wide variety of appliances, coupled with lectures and discussions on the principles of combustion and the many phases of burner adjustment.

During this period, the men were constantly reminded of the safety factors involved in the work to be undertaken and they were particularly instructed on the type of personal injuries that might be experienced, such as burns, bruises, strains, sprains, cuts and infections. Very careful consideration was given to the type of tools to be used and their safe and proper use explained.

Specific safety instruction was given, in which the particular responsibility of the crew captain and worker was stressed. The first-aid materials to be used were described and a prompt report and treatment of all injuries, regardless of severity, was insisted upon. Instruction was also given on the approved method of artificial respiration.

Employees were urged to give the greatest possible consideration to the careful handling of customers' appliances and, wherever possible, to advise customers on their correct and safe use. Special reference was made to the proper lighting of ovens and back burners. The men were admonished to check the re-lighting of all pilot lights and to ascertain that the customer knew how to get started again. These lectures and discussions were supplemented by descriptive posters in the instruction rooms.

In field work the usual unit consisted of a captain and ten men. During the change-over, safety representatives contacted each crew frequently and replenished the captain's stock of first-aid supplies.

Before formally proceeding with the change-over, which in the case being presented was finally done in a single

step over the entire community, rather than by the isolation of districts, a certain relatively small section was isolated and certain phases of the change-over were observed over a period of weeks to discover any unpredictable defects. This was done primarily to insure the satisfaction and safety of the large group of customers.

Common Types of Injuries

It was observed during the change-over work, that the most common types of injuries experienced by the workmen were caused by:

Burns on hands or arms caused by improper lighting of burners and flash backs caused by igniting gas in mixing tubes.

Burns caused by igniting gas from top lighters when valves were removed or broken off.

Carelessness in the use of tools such as drills, reamers, broaches, crimpers and extractors.

Cuts and bruises incidental to chiseling off nuts on oven burners, when removing the burners for cleaning and reaming.

Cuts becoming infected from working on dirty appliances.

Certain phases of customer safety developed during the change-over and these are briefly as follows:

An opportunity was presented for a careful inspection of every gas appliance on the system, with subsequent adjustments.

A removal of flue obstructions, such as steel wool, filtering paper, rags and sheet metal orifices which may cause dangerous flame conditions, was possible and the customer advised accordingly.

Gas valves on appliances, broken at the manifold, loosely fitting in the manifold or with loose cores, were replaced or repaired to eliminate gas leakage.

All water heaters were carefully inspected for blank or obstructed flue connections, poor locations and general burner condition. Where unfavorable conditions were noted, the customers' attention was called to them. This was true in general of all appliances.

From this brief and necessarily sketchy outline, you can easily observe that a change in the character of gas supplied requires a great deal of investigation and planning. The general safety of customers and employees is considered very carefully by all of our great gas undertakings and every effort is made to safeguard them. This not only applies to the actual time of the change-over, but it is followed up very closely from that time.

Crews of the trained men are always held in readiness to care for any emergency arising in customers' premises and all cases are handled with such promptitude that their safe and satisfactory execution is inevitable.

There are few industries in this country who exhibit greater effort, care or solicitude for the safety of their customers than does the gas industry.

Publicity and Advertising Committee Personnel

Henry Obermeyer

MEMBERS of the recently created Publicity and Advertising Committee of the American Gas Association, announced by Managing Director Forward, are:

Henry Obermeyer, assistant to the vice-president, Consolidated Gas Company of New York, chairman; Kenneth Magers, publicity manager, The Union Gas and Electric Company, Cincinnati; R. S. McCarty, manager, advertising department, Philadelphia Company, Pittsburgh; H. W. Olcott, Jr., advertising manager, The Philadelphia Gas Works Co., Philadelphia; D. D. Parry, advertising manager, Central Hudson Gas and Electric Corp., Poughkeepsie, N. Y., and William Reynolds, advertising manager, Electrolux, Inc., New York.

As chairman of the committee, Mr. Obermeyer automatically becomes a member of the Executive Board of the Association.

New Appointments at Headquarters

CHARLES W. PERSON has been appointed director of Publicity and Advertising of the American Gas Association, according to announcement by Alexander Forward, managing director. Mr. Person will work closely with the newly created General Committee on Publicity and Advertising, whose chairman, Henry Obermeyer, Consolidated Gas Company of New York, is a member of the Executive Board.

Mr. Person was formerly with the Association for a number of years and now returns to it. He is well known to many advertising and publicity men in the public utilities field.

The AMERICAN GAS ASSOCIATION MONTHLY will be edited under Mr. Person's direction by James M. Beall, for five years a member of the Association's headquarters staff.

Wisconsin's New Order on Standards

IN an effort to bring about uniformity in gas service throughout the State, the Wisconsin Public Service Commission recently issued a general order on gas standards, effective January 1, 1935.

The order requires periodic inspection by utilities of customers' gas appliances, regulation of specific gravity of gas and general regulations permitting billing for gas service on the basis of heat produced rather than cubic feet furnished.

Under the new order all utilities will be required to file with the commission periodically a statement of how and when they intend to inspect their customers' appliances. All utilities must make an inspection at least once each five years.

If a customer's meter is found to be more than 3 per cent fast, the utility must repay the customer the loss for one-half the period the meter has been in service. If a meter is found to be slow, a utility is allowed to bill the customer for the excess for the six months prior to the discovery of the error.

Radical changes are made in pressure requirements, with a higher maximum pressure permitted, but with less variation allowed.

More stringent requirements to produce pure gas are laid down, particularly to eliminate sulfur and ammonia.

If a company does not maintain its gas as a standard to produce 520 B.t.u., it must file a schedule of the lower standard it maintains and reduce its rates accordingly.

Companies are given the option of billing customers according to the number of cubic feet used or according to the number of B.t.u. of gas furnished each month.

Limitations are placed on the variations in the specific gravity of gas.

Safety Record

EMPLOYEES of the Elizabeth Street Shop of the Consolidated Gas Company of New York have the distinction of establishing a safety record of seven years' continuous operation without an accident involving loss of time from work.

This department, with an average of 150 employees, holds the safety record of the Consolidated Gas Company. It has in its possession a bronze safety plaque, with suitably engraved bars for each year of operation without accident. The Ravenswood gas manufacturing plant, in Long Island City, is second to the Elizabeth Street Shop, with a total of five years without accident.

The Safety Bureau announced that the Elizabeth Street Shop had worked, in the seven-year period, a total of 2,317,000 man-hours without a lost-time accident. This is the equivalent of one man working eight hours a day, five days a week, for 1,109 years and 156 days.

The seven-year record of the Elizabeth Street Shop is believed to be without precedent in the utility industry.

Resistance of Range Pilots to Drafts

By HARRY W. SMITH, JR.

A. G. A. Testing Laboratory

ONE of the most apparent trends in the development of modern gas-burning equipment is towards complete automatic operation. In the field of domestic gas range construction this trend has been particularly emphasized, and numerous ways and means of obtaining such automatic performance have been applied. However, nearly every means so far developed for attaining complete automatic operation depends essentially upon the maintenance of constant burning pilots for purposes of ignition or re-ignition of gas at main burners, and, therefore, the stability of pilot flames under any and all conditions of range usage is of prime importance.

Realizing this situation, the American Gas Association Subcommittee on Approval Requirements for Gas Ranges, at its November 17, 1933, meeting, provided for research to be conducted at the Association's Laboratory in Cleveland, with the purpose of determining the resistance of the various pilot flames on modern gas ranges to various degrees of draft imposed under various conditions of range usage. It was thought that modern developments in range construction and recent increases in the demand for completely automatic equipment had been sufficiently great to warrant possible revision and extension of the requirements covering the stability characteristics of pilot flames.

Investigation Completed

The Laboratory's investigation of this problem has recently been completed and its findings reviewed by the gas range committee. As a result of this study the requirements pertaining to the resistance of range pilot flames to extinction by drafts have been extended and should insure more satisfactory range performance from this standpoint. The reasons for, and the nature of, the changes proposed are of considerable interest to many branches of the gas industry.

Investigating the effects of drafts upon range burner and pilot operation

Before beginning test work, considerable thought was devoted to the several possible procedures which might lead to a satisfactory solution of the problem. Obviously, if it were feasible to determine accurately the severity of draft conditions to which ranges are subjected in the field, it would be most logical to require appliances to comply with Laboratory tests simulating such conditions. Analysis of the many variables, however, which may be involved in field installations pointed to the impracticability of determining the most severe, or even the average, actual draft conditions. For example, assuming a maximum wind velocity for any given locality, there would remain variables such as location of kitchen, placement of windows and doors, and position of the appliance. Consequently, a field survey of a large number of installations would have no general significance and the results secured would be only applicable to those installations involved and the conditions prevailing at the time of the survey.

In view of these facts, it was decided that the most reasonable procedure would be to determine the abilities of a number of representative pilot installations on ranges to satisfactorily resist various degrees of draft applied under different conditions of appliance operation, and, from such data, to establish relative performance data which would reflect the effects of those features of existing gas range design and construction that influence the performance characteristics of pilot flames under such conditions. In view of the fact that the placement and construction of pilot burners on ranges must be governed by other considerations as well as that of protection from drafts, the adopted method of attack seemed to be especially practical.

Method

The initial consideration, of course, was the method which should be utilized in generating and imposing the test drafts. A four-bladed ventilating fan was first used but it was found that the highest velocity was produced in the air leaving the tips of the fan blades, while the velocity at the center of the air stream was much lower. It was apparent, therefore, that reproducible and equitable test conditions could not always be created with such equipment. After some further study of possible types of equipment, it was de-

cided to use the special calibrated blower shown in the accompanying photograph for this investigation. It consists chiefly of a blower having a 12-inch length of 5-inch diameter pipe attached to its outlet.

The discharge end of the pipe contains a sheet metal orifice disc with a 3-inch opening, while a gate valve with a slide plate is affixed to the inlet side of the blower. The base of the blower is hinged to permit the drafts to be directed downward at an angle of 30 degrees from the horizontal, as well as in a horizontal plane. The blower was calibrated for various draft intensities by taking the average of four velocity readings secured with an anemometer in a plane one foot square, normal to the axis of the blower outlet, and 6 feet from the orifice disc. When the slide plate of the gate valve at the inlet of the blower was located so as to produce a draft equivalent to one of the desired velocities (3, 4, 5 and 6 miles per hour) as determined above, the location of the plate in respect to the valve was noted. In the test work it was possible, therefore, to impose drafts of known intensities by merely setting the blower with the orifice disc 6 feet from the pilot or burner under test and by fixing the slide valve at one of its calibrated positions.

Ranges Selected

For purpose of test, twelve representative types of modern automatic gas ranges were selected. Nearly every variety of pilot-operated ignition system for both top or oven burner sections was represented in the group. The range to be tested was placed 6 inches from each side of a partial enclosure formed by 2 walls set at a right angle to each other, the gas rates of all main burners were adjusted on natural gas to within plus or minus 5 per cent of the capacities specified in the Approval Requirements for Gas Ranges; and the pilots were adjusted in accordance with the manufacturer's instructions.

The various wind intensities were directed successively at the range from three horizontal positions, namely, along an axis normal to the front of the range, 45 degrees to the left of this axis, and 45 degrees to the right, and also from the same positions in a plane inclined 30 degrees above the horizontal. The drafts imposed in each case were of two types, namely, steady and interrupted. The interrupted drafts were secured by alternately stopping and releasing the air flow at one second intervals.

In the case of top sections the drafts were focused directly at the center of the cooking top surface; that is, the point on the axis of the air stream 6 feet from the orifice disc coincided with the center point of the top. When horizontal drafts were imposed, the axis of the air stream coincided with the plane of the cooking top. Duplicate series of tests were conducted on the top burners, one series with only the top pilot or pilots operating, and the other with all burners operating. In each case the intensity of the draft was progressively increased from 3 to 6 miles per hour and the velocity at which the flames under test were extinguished, if extinction occurred, was observed.

Drafts, during the tests on oven sections, were directed toward the center of the closed door of the compartment under consideration. Series of tests involving pilot, sub-burner, and main oven burner flames, were successively conducted. Observations of the oven burner flames were made at by-pass and "full on" input rates. During each series of tests, drafts were imposed from the various directions with all possible combinations of oven, broiler, and utensil doors or drawers open. As in the case of top burner sections, the draft velocities were progressively increased until extinction of flames on the burner under test occurred or until the maximum velocity of 6 miles per hour was reached. The effect of gently or violently closing any combination of doors or drawers on the pilot flames when they were operating alone, was also observed.

Test Results

The various series of tests revealed many interesting facts. In the case of top burner sections it was found that: (1) Drafts directed down on flames from an angle 30 degrees above the horizontal were in every case more severe than drafts directed in a horizontal plane; (2) drafts on the pilots in excess of 4 miles per hour were usually too severe for the average well-designed type to withstand; (3) drafts of 3 miles per hour were of sufficient severity to insure reasonable resistance to room drafts and could be withstood by 9 of 11 top burner pilot flames when operating alone; (4) pilot flames could in no case resist drafts so well when the top burners were operating as they could when burning alone; (5) in only 4 cases out of 11 could pilot flames resist 3 mile winds from 30 degrees above the horizontal when all top burners were operating; (6) in 4 out of 12 cases, pilots extinguished by drafts re-ignited from main burner flames when the draft ceased; and (7) the use of utensils partially protected flames from drafts.

During the investigation of oven pilot extinguishment the following conditions were revealed: (1) With oven broiler and compartment doors closed no extinctions were noted even with the maximum test drafts; (2) with oven or broiler doors, or both, open, 3 of 11 pilots were extinguished by 3 mile winds; (3) in the case of ranges, oven pilots were extinguished with no test draft by merely gently closing either oven or broiler doors; (4) neither of the two directions of applying drafts (horizontal or 30 degrees down) consistently created the more severe condition; and (5) none of the sub-burners were affected by a 3 mile per hour draft, while 3 main oven burners operating at by-pass rate were extinguished under the same conditions.

In view of the investigational results outlined above, the A. G. A. Committee on Approval Requirements for Gas Ranges carefully reconsidered the matter of pilot outage by drafts. After so doing, that body proposed certain modifications and extensions of clauses which provide chiefly: (1) For the testing for resistance to drafts of oven and broiler pilots as well as of top burner pilots; (2) for the employment of the new and better types of draft generating equipment developed during the Laboratory study; (3) for equitable intensities and directions of application of test drafts, constituting conditions which any reasonably well-designed pilot should be able to withstand; and (4) for the application of tests covering oven and

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Canadian Gas Association
Pres.—J. Chesley Dawson, Quebec Power Co., Quebec, Canada.
Sec.-Tr.—G. W. Allen, 21 Astley Avenue, Toronto.

Empire State Gas and Electric Association
Pres.—Alfred H. Schoellkopf, Niagara Hudson Power Corp., Buffalo, N. Y.
Chairman, Gas Section—A. M. Beebee, Rochester Gas & Electric Corp., Rochester, N. Y.
Sec.—C. H. B. Chapin, Grand Central Terminal, New York, N. Y.

Illinois Public Utilities Association
Pres.—Bernard J. Mullaney, The Peoples Gas Light & Coke Company, Chicago, Ill.
Sec.—J. R. Blackhall, Suite 1213, 79 West Monroe St., Chicago, Ill.

Indiana Gas Association
Pres.—R. S. Brunner, Indiana Gas Utilities Co., Richmond, Ind.
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Mid-West Gas Association
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Oklahoma Utilities Association
Pres.—H. B. Cobban, Northeast Oklahoma Railroad Co., Miami, Okla.
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Wisconsin Utilities Association
Pres.—G. V. Rork, Northern States Power Co., Eau Claire, Wis.
Exec.-Sec.—A. F. Herwig, 135 West Wells St., Milwaukee, Wis.

Convention Calendar

SEPTEMBER

1- 4 International Gas Union
Zurich, Switzerland

9 American Trade Association Executives
Wernersville, Pa.

9-14 Fall Meeting Division of Gas & Fuel Chemistry, American Chemical Society
Cleveland, Ohio

10-11 Commercial Section, Wisconsin Utilities Association
Hotel Pfister, Milwaukee, Wis.

11-13 Pacific Coast Gas Association
Del Monte Hotel, Del Monte, Calif.

21 Midwest-Indiana Gas Sales Council
Palmer House, Chicago, Ill.

24-28 American Transit Association
Cleveland Public Auditorium, Cleveland, Ohio

24-26 British Commercial Gas Association
Sheffield, England

OCTOBER

1-5 National Metal Exposition
New York, N. Y.

14-19 American Dietetics Association
Mayflower Hotel, Washington, D. C.

Wk. 29 American Gas Association Convention and Exhibition
Atlantic City, N. J.

NOVEMBER

6- 7 Autumn Research Meeting, The Institution of Gas Engineers
London, England

12-15 National Assn. Railroad & Utilities Commissioners
Washington, D. C.

Pacific Coast Gas Association

THE meeting of the Pacific Coast Gas Association, which will take place at Hotel Del Monte, September 11, 12 and 13, will be the 41st annual convention of that organization.

George P. Egleston

President George P. Egleston has announced that the discussions this year will be largely devoted to load building, which is of paramount importance to the gas companies on the Pacific Coast because of the threat of huge blocks of politically developed electric

power which will be thrown on the market upon completion of the Boulder Dam project in California and the Bonneville and Grand Coulee projects in Washington. All aspects of load development will be discussed intensively with the object of developing plans for some form of concerted action by Pacific Coast gas companies.

Judge H. O. Caster, president of the American Gas Association, and George W. Bean, its Washington representative, will be among those present. Principal speakers at the convention will include Paul M. Downing, vice-president and general manager, Pacific Gas and Electric Company; H. L. Farrar, president of the Coast Counties Gas and Electric Company; H. M. Thomas, general manager of the Northwest Cities Gas Company; R. E. Fisher, vice-president in charge of sales of the Pacific Gas and Electric Company; and H. M. Crawford, general sales manager, Pacific Gas and Electric Company.

Two evening sessions will be held during the convention, one being a utilization conference of Technical and Commercial men to discuss the latest developments in both domestic and industrial utilization, and the other being a meeting under the auspices of the public relations section of the Association. A feature of the latter will be the annual public speaking contests for men and women employees.

Another convention feature will be a customers' relations conference in which all sections of the Association will join to discuss the education and training of employees who are in constant contact with the public.

The chairmen of the Association sections which will hold individual meetings during the convention are: W. J. McCoy, accounting section; Pierre Vinet, commercial section; R. E. Fisher, public relations section; Douglas Buckler, publicity and advertising section; F. A. Hough, technical section, and E. L. Payne, manufacturers' section.

American Standards Names G. B. Cortelyou

George B. Cortelyou, president of the Consolidated Gas Company of New York, has been made chairman of the advisory committee of the American Standards Association, which was organized sixteen years ago as the national clearing house for technical standards developed by five engineering societies. Today it has a membership of forty-seven national organizations, which are trade associations, technical societies and Federal Government agencies. It has 1,233 company members.

Mineral Production Map

A MAP showing the average annual value of mineral production of each of the States during 1923 to 1932 inclusive, the most recent ten-year period for which final figures are available, has been prepared by the United States Bureau of Mines.

Within the borders of each State is a circle the size of which is proportional to the average annual value of output; it is divided into four parts, each segment colored to show the relative production of four general classes of minerals. The four general classes of minerals are—petroleum, natural gas and natural gasoline; coal; metallic products; and non-metallic products, exclusive of fuels.

A study of this map will reveal some surprising information, such as which are the principal mineral producing States, where lie the most productive areas, and how large oil and gas loom in the totals. These totals put Pennsylvania in first place, with California, Oklahoma, and Texas in second, third and fourth places.

Copies of the map may be secured from Scott Turner, director, United States Bureau of Mines, Department of the Interior, Washington, D. C.

Dr. Walton Clark, Pioneer Gas Man, Dies

DR. WALTON CLARK, former vice-president of The United Gas Improvement Company, and former president of the Franklin Institute of Pennsylvania, died July 30 at his home, Chestnut Hill, Pa.

Dr. Clark was born in Utica, N. Y., April 15, 1856, son of Erastus and Frances C. (Beardsley) Clark. The Clark family is of English ancestry, the American branch being founded in 1639 by Daniel Clark, of Weaxil, England.

Mr. Clark was educated in the public schools of Utica. At the age of seventeen years he became associated with New Orleans Gas Light Co., going to Chicago, in 1887, where he was engaged in the same line of work, and to Kansas City, in 1888. The same year he removed to Philadelphia to accept a position with The United Gas Improvement Company, subsequently advancing to the position of vice-president of that company in 1903. On July 11, 1923, he retired as vice-president and was made consulting engineer.

In 1904 the Stevens Institute of Technology conferred upon him the honorary degree of M.E., and in 1911 the University of Pennsylvania conferred upon him the honorary degree of Doctor of Science.

Dr. Clark was elected president of The Franklin Institute of the State of Pennsylvania in 1907, and continued in the presidency for seventeen years.

He served as president and director of various companies engaged in public utility work. He was at one time president of the American Gas Light Association, and later of the American Gas Institute, predecessor organizations of the American Gas Association. He was a member of the American Society of Mechanical Engineers, the American Institute of Electrical Engineers and the American Society of Mining & Metallurgical Engineers, and other scientific bodies.

Dr. Clark is survived by his widow, the former Miss Louise Beauvais, who was his second wife; by a daughter, Miss Darthela Clark, and four sons, Frank Shaw Clark, Walton Clark Jr., Theobald Forstall Clark and Beauvais Clark.

With the death of Dr. Clark there is only one living member of the "Old Guard" of the Gas Industry, Frederic Egner of Washington, D. C. Mr. Egner is 88 years old. Other members of the "Old Guard" were E. C. Jones, Charles H. Nettleton, Alex C. Humphreys, Frank D. Moses and George C. Ramsdell.

C. E. Paige to Address International Gas Conference

THE American Gas Association will be represented on the program of the Second Congress of the International Gas Union to be held at Zurich, Switzerland, September 1-4, by Clifford E. Paige, vice-president of The Brooklyn Union Gas Company and a former president of the Association. Mr. Paige, who is also vice-president of the International Gas Union, will present an address, September 2, on "Coordinated Research and Coordinated Rate Making."

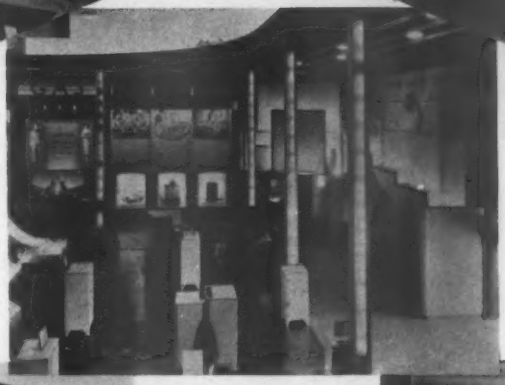
Other representatives of the American Gas Association who will be in attendance are—W. Reed Morris, vice-president, Koppers Gas and Coke Company; Hilmar Papst, vice-president and general manager, Portland Gas and Coke Company, Portland, Oregon; and Alexander Forward, managing director, American Gas Association. Several of the delegates will be accompanied by members of their families.

According to Fritz Escher, of Zurich, president of the Union, the conference will be attended by representatives from Great Britain, France, Germany, Belgium, Switzerland, Czechoslovakia and other countries. The program will consist principally of a series of reports by the members of the individual countries founded on questions which have been circularized among the members of the International Gas Union in the various countries.

Gas Industry Exhibit At World's Fair

West wall—Lounge and basement, showing conversion burner installation.

South wall—Model of smokeless modern city and individual display of gas appliances.



Looking at south wall through Electrolux exhibit.

East wall—showing part of gas range exhibit.

One of the model kitchens.

One of the model basements, showing a gas water heater.

Here are shown several views of the gas industry exhibit at the 1934 World's Fair, Chicago, which is sponsored by the American Gas Association, with member gas companies and appliance manufacturers cooperating. When taken as a whole, the exhibit tells the complete story of how modern gas appliances can contribute to home comfort and convenience.

Glass-Making at the World's Fair

GLASS-MAKING traditions that were five centuries in forming have been broken at the 1934 World's Fair at Chicago, for the three "glass masters" working at the exhibit of the Venice-Murano factory now recognize that "You Can Do It Better With Gas."

Since the 15th century, the glass makers of Venice have been sending their two-masted sailing vessels across the Adriatic Sea to Dalmatia, to bring back dried beech wood for the glass furnaces. Upon its arrival in Venice, this dry wood was—and still is—baked in an oven for two days to remove the last traces of moisture. Only then was it suitable for firing the furnaces, for moisture is the enemy of clear glass.

When Cavaliere Celso Pier Baccovich of the Venice and Murano glass factory came to Chicago to arrange for the exhibit, he learned with dismay that the rules of A Century of Progress Exposition forebade the use of any solid, smoke-producing fuel. In desperation, he was about to abandon plans for exhibiting, until one of the engineers from the industrial department of The Peoples Gas Light and Coke Co. convinced him that gas would do the job.

Now gas is doing the job better than the Venetian glass makers have ever seen it done before. Gas furnaces provide a more even temperature, contributing to the exactness of fashioning the glass.

What is more important, the use of gas enables the glass makers to heat their furnaces to a much higher temperature—1,840 degrees Fahrenheit instead of 1,440 degrees. Not only does this greater heat make the glass clearer, by burning out impurities, but it enables the use of pigments which would not work properly at lower temperatures.

This ability to use new colors and to make a clearer glass opens new horizons to this 500-year-old industry. The three old-world artisans working on the grounds of the Chicago World's Fair can actually make better Venetian glass than their comrades at the Murano factory in Venice.

Gas Flood Lighting in Boston

AS an interesting example of the wide adaptability of gas, and for experimental purposes, eight brilliant, high-pressure gas lamps have been imported from England by the Boston Consolidated Gas Company and have been installed to illuminate the yard and entrances of the McBride Street Service Station.

The largest of these lamps has a three-mantle unit and 4500 candle power. Other of the lamps have two mantles and are 3000 candle power, while the smaller ones have a one-mantle unit and 1500 candle power.

The essential advantage of gas lighting over electric lies in the area of light center. A 1500 candle-power gas unit has over 20 square inches of light surface, while a 750-watt electric lamp with the same candle power has its light center concentrated on a very much smaller area. As a result, the gas lamp gives a larger volume of light, eliminating the objectionable dazzling effect of the electric lamp.

Kenneth Williams Appointed

KENNETH WILLIAMS has been appointed manager of sales for the department of engineering and construction of Byllesby Engineering and Management Corporation, according to H. W. Fuller, vice president in charge of that department.

The engineering department of the Byllesby corporation, which has for some years practically confined its services to the subsidiaries of Standard Gas and Electric Company, is expanding its activities to include general engineering practice for independent clients. It is in this phase of the corporation's activities that Mr. Williams will be associated.

New Directors

N. B. Bertolette, president of The Harrisburg Gas Company, Harrisburg, Pa., has announced the election of Albert L. Allen and Ritchie Lawrie, Jr., to the board of directors of the company. The newly elected directors replace W. W. Bodine and Stuart Cooper, of Philadelphia.

Honored for Life Saving

Two employees in the customers' service division of The Philadelphia Gas Works Company, James Donnelly and Herbert W. Quaile, were singularly honored at the president's staff meeting on July 31 for the saving of human life by the application of the Schafer Prone Pressure method of resuscitation.

Mr. Donnelly was awarded a McCarter medal, bar and certificate and Mr. Quaile received a McCarter medal and certificate. The presentations were made by Conrad N. Lauer, president of The Philadelphia Gas Works Company, on behalf of the American Gas Association.

James Donnelly

The award of a medal, bar and certificate to Mr. Donnelly was the result of his quick action in saving two lives within the space of a month.

A total of twenty McCarter awards has been made to employees of The Philadelphia Gas Company.

Herbert W. Quaile

Gas Featured in Pottery Exhibit

Gas is conspicuously on the job at one of the most interesting and popular exhibits at the Chicago World's Fair—the working exhibit of the Haeger Potteries.

The exhibit, pictured above, which has received an unusual amount of publicity, consists of a complete pottery in steady operation. The feature of the exhibit which will be of greatest interest to gas men is the kiln in which 5,000 pieces of pottery are fired every day. This kiln, incidentally, also attracts much attention from visitors.

The kiln—a 25-foot circular tunnel—was installed by the Allied Engineering Company of Cleveland, Ohio, and it has produced an unusually high percentage of perfect pieces from the first hour of its operation. So successful has this kiln proved, in fact, that the Haeger Potteries are planning to convert the kilns in their factories at Dundee, Illinois, to use gas, since they are actually getting better results on the World's Fair Grounds than they are in their regular production.

The director of the Haeger Exhibit has obligingly consented to the use of a sign calling the attention of visitors to the fact that "For perfect temperature control, this kiln is gas-fired."

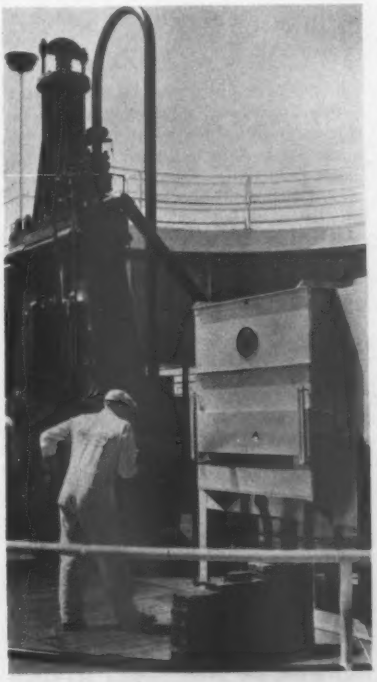
Gas Furnace at the Chrysler Exhibit

A FORCED draft gas furnace plays an important part in one of the most popular features of the Chrysler Motors Exhibit at the Chicago World's Fair.

The feature consists of three units—the gas furnace, which heats billets of special alloy steel to a temperature of 2210° F., the temperature being governed by an automatic control mechanism; the 4,000-pound steam drop forge hammer, which in action exerts a force of 15,000 tons on the red-hot billets, shaping them in four operations; and the trimming press, where the excess metal is scaled off the forging while it is still hot.

The earth-shaking impact of the great hammer draws the crowds at the Exposition, and the spectacle of somebody working keeps them watching. They see one of the operators reach into the white-hot interior of the furnace with a long pair of tongs, and pull out a glowing steel billet, 6 x 3 x 1½ inches. Moving over to the steam hammer, he puts one end of the billet in a groove, and turns it under the hammer blows until it is rounded and tapered.

The operator then "upsets" it—thrusts the tapered end into a carefully sized hole in the anvil block, and brings the hammer down on the projecting portion, which is forced into shape between two dies, one in the anvil and one in the hammer. A further shaping follows.



Rod Heating a Growing Outlet

As a result of considerable success at the MacWhyte Company, Kenosha, Wisconsin, interest in gas for rod baking revived rapidly. Shortly afterwards two units were installed at the Seneca Wire Company, Fostoria, Ohio, and this was followed by two additional units in the same plant. A.G.A. headquarters received several inquiries from various parts of the country asking for help in selling rod heating installations, and consequently, one may almost look on it as a new development.

In February, A. J. Huston, industrial supervisor at the Worcester Gas Light Company, reported on the sale of a rod heating furnace at the American Steel and Wire Company. In this case, speed, improved uniformity of product and reduction in scale were the deciding factors which made the manufacturer adopt a high pressure Surface Combustion rod heater in place of fuel oil at 3 cents a gallon. Manufactured gas was used at an average cost of 59 cents per M cu.ft.

Rod heating, in case this term is not familiar, may be likened to a combination of baking and annealing of steel rods or heavy wires whereby a coating of lime is baked on to the coil of wire or rod. Subsequently, this material is used as the raw stock for drawing out to thinner diameters and for making wire springs, coils, etc.

Sales Experiences

Compiled by Sales Experience Committee, Industrial Gas Section

For three months now The Monthly has published these industrial sales experiences.

Many more experiences have been submitted, but largely as a result of the Committee's efforts. Perhaps you have had an unusual experience, a specially difficult sale to make, or competition of unusual severity. If you have, we would like to pass your story along to the industry. It might prove of inestimable value to other industrial gas men and further increase the use of gas in industry. If you prefer, address a letter to the American Gas Association and you will receive a supply of blanks on which to report your most recent success.

Speed

In a brass forging plant operators are on piece rates, so that speed of heating is very important. When J. H. Doak of The Connecticut Light & Power Company replaced electric furnaces with a Surface Combustion direct fired brass forging furnace, the operators were very well pleased. Lower operating cost, faster heating and less scale than were produced by the electric furnace resulted.

This installation, using 3000 cu.ft. of manufactured gas per hour at a rate of 65 cents per MCF, compares very favorably even with oil at 5 to 6 cents per gallon and electricity at 8 to 9 mills per KWH. The comparison with oil was particularly favorable since it was necessary to use a muffle with the oil, which lowered the efficiency and added considerably to the maintenance cost.

Wire Again

The many reports of sales of gas replacing electric installations point toward a definite trend away from electricity for industrial heating. The growing momentum of this movement clearly justifies the judgment of industrial gas engineers who predicted long ago that experience with the higher priced electrical heating would eventually bring back a great deal of industrial business to the more satisfactory and at the same time lower cost gas operation.

In a recent sale made by E. Ruckelshaus, industrial fuel representative of the Public Service Electric & Gas Company, a tube furnace for annealing strands of bronze and brass wire was rebuilt so that gas in place of electricity could be used. The furnace had been operating some time using electricity at 2 cents per kw.hr., but is now equipped with American Gas Furnace Company burners taking 300 cubic feet of 525 B.t.u. gas per hour, at an average rate of 90 cents per M cu.ft.

The tube furnace consists of 40 brass tubes, designed by the gas company and rebuilt using B & W insulating firebrick for high temperature insulation. This furnace heats up in an hour and 35 minutes requiring 400 cubic feet of gas and then is run for 9 hours and 25 minutes using 1673 cubic feet of gas at 1076°. Gas is also used as an atmosphere in the tubes requiring approximately 120 cubic feet per hour. The result of operating this furnace has been a better wire than was made in the Bell-type electric furnace. The surface condition of the wire is improved and the anneal is such that breakage occurring in later processes has been reduced by 80%.

Risk of $4000

In Oakland, California, there is a large Surface Combustion galvanizing installation which was sold on a trial basis at a risk to the Pacific Gas & Electric Company of almost $4000.

According to J. H. Gumz who sold this installation, taking into account only fuel, zinc and dross, a saving of $1.25 per ton was shown with a longer kettle life over previous fuel operation that has not yet been evaluated.

The company is very well satisfied after three years, and since then other similar jobs have been sold. Natural gas at 50 cents per MCF is competing with oil at about $1 per barrel.

Largest Bakery in the West

When manufactured gas was used in San Francisco, only one of the traveling ovens in this bakery was gas operated, but now that natural gas has come, the entire bakery, thought to be the largest wholesale bakery in the West, is on natural gas.

There are fifteen Dutch ovens and two Baker Perkins traveling ovens, making a total maximum hourly demand of 50,000 cu.ft. of natural gas per hour.

J. H. Gumz of the Pacific Gas & Electric Company reports that the greatest single factor in making this sale was cleanliness, and consequently gas at 22 cents per MCF successfully met competition with oil at $1.01 per barrel.

Beer and Pretzels

Now that beer has had a chance to regain its popularity it is only natural that gas men everywhere should look to the pretzel business. As expected, reports are beginning to come in of the successful sale of gas for pretzel ovens.

As a general rule, gas ovens will be lower in first cost than oil ovens and the fire hazard will be definitely less. Frank H. Trembly, of The Philadelphia Gas Works Company, reports these very factors as the determining ones in the sale of a gas-fired traveling pretzel oven at the Reisman Pretzel Company in Philadelphia. Approximately 2,000 cubic feet per hour will be used in an oven of its own make. Gas at 73 cents per M cu.ft. (530 B.t.u.) has proved cheaper than oil at 5½ cents per gallon.

Potato Chips

Almost simultaneously two reports of sales of potato chip cookers were received. One by C. W. Gale, Public Service Company of Colorado, and the other by G. W. Miner, Memphis Power & Light Company.

In the first case, 830 B.t.u. natural gas at 53½ cents per M cu.ft. replaced three coal-fired cookers using 10,000 B.t.u. coal at $4.50 per ton.

In the second case, 1,000 B.t.u. gas at 47 cents per M cu.ft. is being burned through McKee proportional mixing equipment. A better grade of chip and higher production, together with reduced spoilage, are reported.

No Demand Charge

Dating back to the days when Venetian triemes traded in Cornwall, tin has been an important metal and has withstood the ups and downs of countless centuries. Old though it is, electric salesmen were not slow in trying to get the business and even with a rate of .015 cents per kw.hr. gas proved to be lower in cost, according to O. F. Reynolds, industrial engineer of the Chattanooga Gas Company. The tinning pot furnaces at the American Manufacturing Company in Chattanooga are now operated at lower cost with 520 B.t.u. gas at $1.00 per M cu.ft. than with electricity formerly used.

The installation with gas is less expensive, and particularly in these days of fluctuating production can real economy be shown since there is no demand charge to pay for gas when production is slow.

Boilers Galore

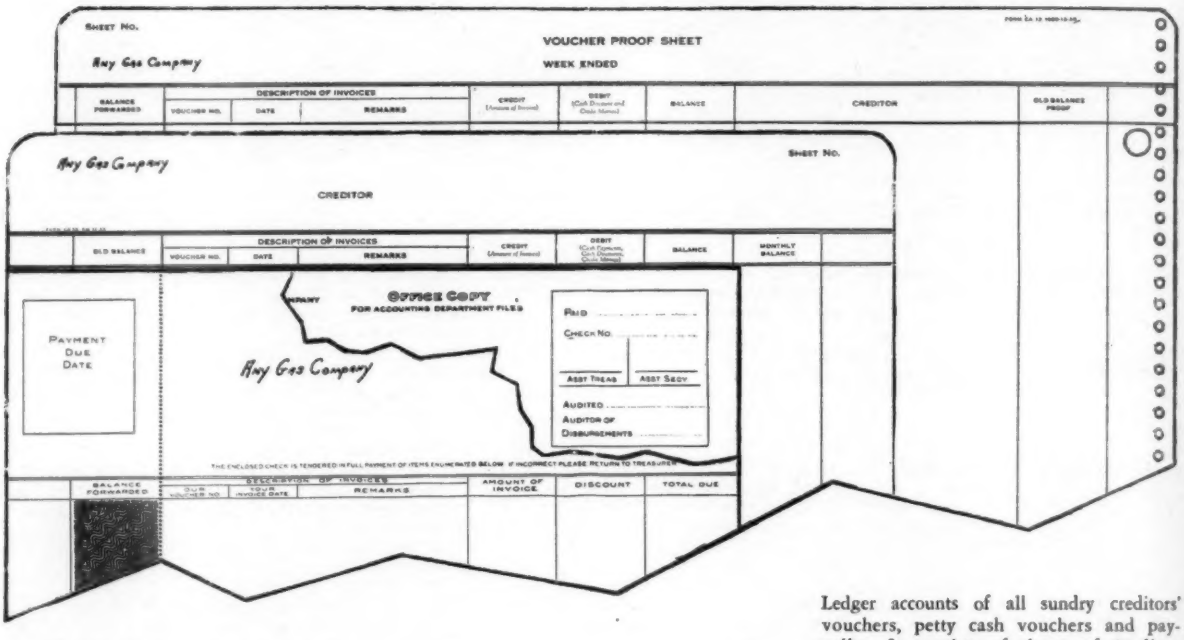
So many interesting boiler sales have been reported that it will not be possible to discuss all of them in detail. Consequently, the following table summarizing the results has been prepared:

Location	*Size*	*Gas Rate*	*Competing Fuel*	*Remarks*	*Reported by*
Hotel Mills, Denver, Colo.	Ideal S 48-6	34½¢/MCF 830 B.t.u. will use a maximum of 1740 c.f./hr.	Sub. bit. coal $4.25 per ton	Killum gas burners. Original gas installation poorly made by local plumber, nearly causing loss of job.	C. W. Gale, Public Service Company of Colorado
Rankin Car House, Pittsburgh Railways	10 S 443 Bryant, 8 S 443 Bryant, 100 Humphrey unit heater	45¢/MCF 1130 B.t.u. will use about 1000 c.f./hr.	Coal at $1.25 per ton	Flexibility of gas for widely scattered heating.	R. L. Melaney, Equitable Gas Company, Pittsburgh, Pa.
Steam Laundry, San Francisco	Scotch Marine boiler	35¢/MCF 1000 B.t.u. will use about 1000 c.f./hr.	Oil at $1.09 per barrel	Cleanliness rather than cost sold the job, although freedom from tending burners was a factor.	J. H. Gumz, Pacific Gas & Elec. Co., San Francisco, Calif.
Hotel, San Francisco	1200 hp. installed three 400 hp. units	14¢/MCF 1000 B.t.u.	Oil at $0.89 per barrel	N.G.E. type A burners. Higher efficiency makes saving on B.t.u. basis. Hand control of gas and draft operated on scientific basis.	J. F. Aicher, Pac. Gas & Elec. Co., San Francisco, Calif.
Drake Cleaners, Memphis	30 hp. HRT boiler	40¢/MCF 1000 B.t.u. will use 1200 c.f./hr.	Coal at $4.25 per ton	2L Webster burners with automatic high-pressure regulator controlling gas and louvre doors. Saved unsatisfactory labor. Modernizing of piping traps, etc., effected big saving.	P. B. Woodward, Memphis Pr. & Light Co., Memphis, Tenn.
Pressing Shop, Memphis	2 hp. low-head gas boiler	60¢/MCF 1000 B.t.u. will use 100 c.f./hr.	Coke at $8.00 per ton	Many of these installations can be modernized and improved.	R. P. Heslip, Memphis Power & Light Co., Memphis, Tenn.
Tire Retreading, Memphis	6 hp. boiler	55¢/MCF 1000 B.t.u. will use 300 c.f./hr.	Coal at $6.50 per ton	Ceco gas burner. Good regulation of steam pressure only possible by use of gas boiler.	G. W. Miner, Memphis Power & Light Co., Memphis, Tenn.
Mirror Silvering, Waterbury	3 hp. McKee boiler	$1.10/MCF 520 B.t.u. will use 240 c.f./hr.	Anthracite at $11 per ton	Originally used a small bucket-a-day coal heater, but speed was too slow.	W. W. Young, Jr., Conn. Lt. & Pr. Co., Waterbury, Conn.
Federal Seed Loan Office, Memphis	Five boilers designed for gas	22¢/MCF 960 B.t.u. will use 3500 c.f./hr.		High salvage value for boilers when short-term lease expires.	J. S. Robinson, Memphis Power & Light Co., Memphis, Tenn.
Union Planters Bank Bldg., Memphis	HRT boiler	20¢/MCF 960 B.t.u. will use 7000 c.f./hr.	Oil at $2.30 per barrel	Atmospheric multiset burners. Showed 40% saving over oil.	ditto
Crescent Laundry Cleaners, Memphis	217 hp. Lo-Hed boiler	18¢/MCF 960 B.t.u. will use 12,000 c.f./hr.	Coal at $3.75 per ton incl. delivery and ash removal	Lower initial cost of gas over stoker, steady steam pressure. Value of gas service in other plant managed by this company.	Louis H. Hungate, Jr., Memphis Power & Light Co., Memphis, Tenn.
Boulder City Bakery	5 hp. conversion	58¢/MCF 830 B.t.u. will use 250 c.f./hr.	Oil at 5¢ per gallon from local field	Cleanliness and flexibility of control. Used to heat oil for firing bake ovens.	C. W. Gale, Pub. Serv. Co. of Colorado, Boulder City, Colorado.
Continental Can Co., Denver	Pittsburgh 5 S and No. 27 Excelso	50¢/MCF 830 B.t.u. will use 200 c.f./hr.	No competitive fuel	Change over from an undersized water heater installation.	C. W. Gale, Public Serv. Co. of Colorado, Denver, Colo.
Homewood Car Shops, Pittsburgh Railways	Bryant boilers and Humphrey unit heaters	41¢/MCF 1130 B.t.u. will use about 10,000 c.f./hr.	Coal at $1.25	Essentially sold because of convenience, better temp. control, varied temp. requirements.	R. L. Melaney, Equitable Gas Co., Pittsburgh, Pa.

ACCOUNTING SECTION

E. B. NUTT, Chairman H. W. HARTMAN, Secretary A. S. CORSON, Vice-Chairman

An Accounts Payable Machine Installation*



By GEORGE L. HARRISON

Consolidated Gas Company of New York

THE application of bookkeeping machines to the principles of public utility accounting is no longer in the experimental or theoretical stage. To a greater or less degree, it has become an accomplished fact. No doubt many utility companies either have machine installations for their general accounting work or have given study to this subject. It is generally admitted that increased efficiency is the ultimate result when such installations have been made.

It often happens that the conversion of records from long hand to machine operation is not made to conform in its entirety to the principles of a machine plan. Company policy may require the maintenance of records not readily adaptable to the producing of results on a machine plan in the most efficient manner.

In presenting briefly this Accounts Payable machine installation it is not the intent to stress only the brighter side of the results obtained, but also to point out some of the problems which were confronted.

Prior to the adoption of the machine plan, a study of the entire routine of the Accounting Department was made, having in mind that as the result of such a survey a procedure could be established that would insure a steady flow of work through the department daily and thereby minimize peak conditions. The changes involved as the result of this study were so broad in their scope that they embodied not only the Accounting Department but both the Treasury and Auditing Departments as well.

It was found that one of the major problems to be dealt with was not the installation and operation of the machine plan but the organizing of the clerical staff to the extent that the routine would function smoothly, thereby automatically feeding a steady flow of work to the accounts payable machine operator.

Before outlining the machine plan, it is believed desirable to comment upon another record which is so closely related to it that it plays a very important part in the method of operation. This record, which is known as the Audit Register, is a control for the distribution by General Ledger accounts of all sundry creditors' vouchers, petty cash vouchers and payrolls. It consists of sheets of 50 lines each which contain, in addition to the distribution columns that serve as a control for the posting of the detailed accounts to the subsidiary ledgers, two additional columns, one for the gross amount of the charge and the other for recording the amount of the cash discount. (Detail accounts are charged with the gross amounts billed and cash discounts credited in one amount to operating or construction.) This record, which has been carried on for many years as the source of the report of vouchers audited, submitted for the approval of the Executive Committee each week, is also prepared on a bookkeeping machine, equipped with adding attachments for the automatic totalling and carrying forward of the entries.

In this regard, there is one phase of departmental routine that might be of interest. The audit register records daily the accumulation of entries to be utilized in controlling the amounts posted to the underlying records. With the aid of this audit register, and the further fact that there is in effect what may be termed "compulsory posting" to the distribution ledgers, statistical records, and Accounts Payable, as an established daily routine, the records are always in current balance.

* Contribution from the Accounting Machines Committee.

The Machine Plan

The posting operations affecting the Accounts Payable Machine Plan may be divided into two distinct groups. One, the posting of vendor's invoices, petty cash and payrolls, the other cash. When posting items under the first group, the following results are simultaneously accomplished by a single operation:

A—The vendor's pay statement, in duplicate. (Often referred to as a remittance advice.)

B—The vendor's ledger account, balanced.

C—The voucher proof sheet.

The voucher proof sheet, which is a very important part of this entire operation, represents the complete transaction as entered in the ledger account and has been designed to accommodate the same number of items as are listed on the audit sheet. The accumulated totals on the proof sheet must, therefore, at all times, be in accord with the amounts tabulated on the audit sheet. In the event that an error occurs in transcribing from the original source to the ledger sheet, such variation would immediately come to light when reconciling the totals on the voucher proof sheet with the audit sheet. Such variation can readily be traced by a comparison of the two forms.

After the invoices have been posted to the Accounts Payable Record, they are filed in payment due-date sequence in a special file provided for such accumulation. The vendor's pay statement remains with the ledger sheet, and in the event that there may be other invoices subsequently passing through the accounts that bear the same due-date, such items are automatically posted to the pay statement, and, concurrently, to the ledger sheet and proof sheet.

The Accounts Payable machine operator refers each day to the payment due-date file and, after arranging the items selected from this file in alphabetical order, picks out the necessary pay statements to accompany them. The pay statements and the accumulated invoices, after being compared, are then forwarded to the auditor of disbursements. The duplicate copy of the pay statement, which becomes the Accounting Department file copy, provides for the approval of the auditor of disbursements after the invoices have been checked by his staff.

The entering of items on the vendor's pay statement, simultaneously with the entry on the vendor's ledger account sheet and the voucher proof sheet (which entry has been checked with the total on the audit register) automatically eliminates the possibility of error in the aggregate amount of the invoices involved. There is, however, the possibility of an invoice being entered to the credit of the wrong vendor's account, but the chance of such an erroneous entry being passed through the provided channels and being paid in error is very remote, for the following reasons:

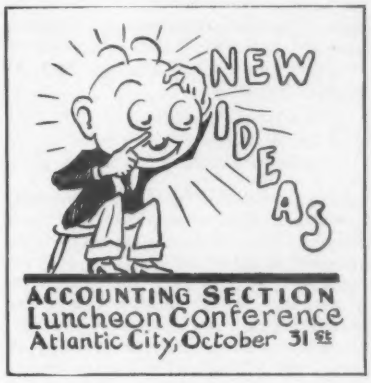
1. In the operation of machine posting, the operator is required to transcribe the name of the vendor from the original source to each ledger account in a space at the right side of the sheet provided for that purpose. At the time of making this transcription, the operator is unable to see the vendor's name at the top of the ledger sheet. Consequently, if an invoice is entered on the wrong sheet, the different name in the prescribed column of the ledger sheet will stand out clearly.
2. The comparison made on the "due-date" for the invoices to be paid, between the invoices in the due-date file and the pay statements, would automatically reveal any discrepancies that may exist.
3. The verification of the auditor of disbursements before affixing his signature to the respective pay statements is a further safeguard against errors in posting.

After the auditor of disbursements has approved the duplicate copy of the pay statement, both the original and duplicate copies, together with the invoices applicable thereto, are forwarded to the Treasury Department for payment. The original is mailed to the vendor with the check; the duplicate is returned to the Accounting Department, attached to the respective invoices.

This system lends itself readily to the preparation of the check in conjunction with the pay statement. Being interested primarily in the accounting advantages of the system, this installation did not incorporate this feature for the reason that it was not considered desirable to disturb the existing routine as to the issuance of checks, under the direction of the treasurer, which were being effectively handled. There may be advantages in preparing the checks in conjunction with the pay statements in cases where that is adaptable to the established routine.

Cash is posted daily from a loose-leaf cash book. In this respect the machine plan again provides a control, as a cash proof sheet is maintained similar to the voucher proof sheet which records all cash postings. This form provides for the same number of postings on each page as is provided for in the cash book so that upon the completion of each page of cash postings to the vendor's ledger account, the amount accumulated in the machine register can be balanced with the total disbursements as shown by the corresponding page of the cash book.

Accounting Section Luncheon Conferences



A FEATURE of the Accounting Section convention program will be a series of luncheon conferences to be held at the Ritz Carlton Hotel, Atlantic City, on Wednesday, October 31. Conferences are being provided for five groups as follows:

Accounting Machines
Customers' Accounting
Customer Relations
General Accounting
Office Management.

The purpose of these luncheon conferences is to provide an opportunity for the exchange of information regarding accounting practices in the various utility companies, as well as a discussion of the many current problems with which accountants are confronted.

Prominent members of the Accounting Section will preside at each of the luncheon sessions. While the Luncheon Conference Committee has accumulated material for discussion at each session, there will in no sense be any formal program. No minutes will be kept—everything will be "off the record." The luncheon conferences, each of which will be relatively small, are being planned so that any member may participate, both by asking questions and by contributing their own experiences regarding the various subjects under discussion. Judging from the character and controversial nature of the topics received to date for discussion, the luncheon conferences promise to be an outstanding success.

Application blanks for luncheon reservations will be made available to members soon. It is urged that reservations be made at as early a date as possible. More detailed information concerning the luncheon conferences will be printed in next month's issue of "The Monthly."

Plan for Payment of Vendors' Invoices

Considerable care was exercised in the establishment of a plan for payment of vendors' invoices to adapt it to two important phases of company routine. The first, and it may be stated the most important, was the arranging for the disbursing of the company's funds at intervals during the month to conform to the financial plan of the Treasury Department. The second related to the establishment of a procedure to distribute the cash payments in such a manner as to eliminate the possibility of creating peak conditions so far as the posting operations are concerned.

All vendors' invoices entering the records of the company are classified into one of two groups. They are designated as either "discount" vendors or "regulars." The term "regulars," as implied here, is used to designate the accounts that do not permit the taking of cash discounts.

Invoices subject to cash discounts are scheduled for payment every Thursday. When the schedule is interrupted by a holiday, special arrangement is effected with the Treasury Department in advance to make the necessary disbursements either the preceding or subsequent day. Invoices rendered by vendors, classified under the group designated as "regulars," are segregated into three divisions, namely:

Affiliated Companies.
Active Accounts.
Inactive Accounts (Sundries).

Invoices rendered by the affiliated companies are paid on specified days each month, whereas the invoices of vendors, classified as active accounts, are paid on the 15th of each month. The latter class is representative of vendors who render invoices against the company frequently. Disbursements are made on Tuesday of each week, holidays, of course, necessitating a change in the routine, for the inactive or sundry accounts.

It was found that this disbursing plan results in an equal distribution of work for the Sundry Creditor machine operator from the angle of posting cash. Exceptions, of course, must be made in instances where it is essential that immediate payment be made to take advantage of a substantial cash discount. There are also a relatively small number of invoices paid specially by direct instructions of an executive officer.

In general, the system has worked out very effectively during the time it has been in operation. As a result of running a trial month before its installation, most of the problems incident to co-ordinating it with the balance of our accounting routine could be anticipated. It has proven a valuable asset in the organization of posting to the construction and operating ledgers, and the daily balancing of these postings has contributed materially to the relieving of the peak conditions at the end of each month.

Form Standardization*

By H. E. Olson

Columb a Engineering Corp., New York, N. Y.

STANDARD forms serve the interests of the large business concern in two ways; as an aid to management and as a saving of out-of-pocket expense.

As to "aid to management," the importance of standard forms naturally depends upon the size and complexity of the business organization. A newsboy or the proprietor of some small concern could not derive a great deal of benefit from standard reports on his business, since its operations are simple and the possibilities of concealed leaks and losses are relatively few. He may be sufficiently informed by knowing his cash balance and the value of his inventory. But it would be impossible for the management of a large business to visualize what is going on in the organization or to determine with any degree of accuracy the efficiency with which various functions were being followed without factual reports on the many phases of its operations.

As to the second way in which standard forms serve the interests of the large business concern, "savings in out-of-pocket expense" result chiefly from the elimination of those forms originally installed to meet some need that has since ceased to exist; from re-designing necessary reports, so as to lessen the work of compiling them as well as to facilitate reading them, from reducing the number of different grades of paper stock used, so as to permit of savings from purchasing in large quantities; from adapting the quality of the paper stock to the use the report is expected to receive; and from printing in maximum quantities, which reduces the unit cost of the job.

Aid to Management

It would seem that the greatest benefit to be derived from standard forms is the first consideration referred to—the aid they offer to the management in finding the right answers to business problems. However, a form is not an end in itself; it is simply a means of conveying information, and it cannot possibly have greater utility or value than the information it conveys. The success of the management in meeting the multitudinous problems of modern business depends upon the soundness of the judgment involved, which, in turn, depends upon the reliability of the data and clarity of the reports upon which the judgment is based. Reliability and clarity depend to a large degree upon the consistency in the method by which the data is compiled, or in other words, upon uniform procedure. The most effective way of obtaining uniform procedure and certainly the only way of maintaining it is to keep the forms that act as a guide to the procedure standard at all times.

Many efforts at standardization of forms, reports and procedure have been sporadic rather than consistent and sustained. They have generally resulted from the opportunity of reducing expense by having some fairly standard forms, such as checks and billheads, which are in use throughout several offices, printed and stocked at a central point. Sometimes the advantages of such a plan are urged by an enterprising printer in an effort to increase his own business. Again, the standardization of certain forms, such as monthly financial statements, may have been forced by the difficulty of making satisfactory and consistent consolidations and comparisons of the financial and statistical reports of companies that have been brought together under one management.

Continuous Control

Standardization work does not begin or end with designing forms that are neat and inexpensive, having them printed in maximum quantities and used throughout a group of companies. This is probably relatively unimportant as compared to the feature of continuous control, as a form is likely to be altered beyond recognition after a period of a few years if unrestricted replenishment is left with the individual companies. This condition can readily occur, since, the first time a new supply is needed, a printer may be consulted who is not the one that handled the original order. As a result, the style of type may change or the printer may not have the identical quality of paper that was used in the original order; he may substitute an inferior grade or be overstocked with a better grade which he is willing to use at no advance over the price of the original quality. Thus, a change in the grade of paper, the style of type, and possibly in the color, may result. Still more important is the fact that these changes may, upon subsequent reorder, be regarded

* Contribution of General Accounting Committee.

as standard requirements and the price charged by the printer based accordingly. Alterations of this character, occurring at the time of reorder, soon result in a condition where the only feature that the form retains in common with the original or with the corresponding one used elsewhere is its form number. It would seem, therefore, that the price of standard forms, like the price of liberty and of good roads, is eternal vigilance.

The foregoing general principles are applicable to any large organization, but, unquestionably, the greatest advantages are to be realized in those organizations composed of scattered subsidiary companies under centralized management. Most of such large organizations in the gas industry, it will be remembered, have resulted from mergers and acquisitions of previously independent companies, as well as by the organization of new companies. Naturally, in companies that were organized independently of each other, any different views of the individual managements would be reflected in the forms used and the procedures followed. They may or may not be well adapted to the needs of the various companies, the important consideration being that their probable multiplicity and variety would make difficult the attempt of a central management to conduct uniformly the operations of the subsidiary companies.

Method Used by Large Corporation

By way of making the foregoing general principles more concrete, and of illustrating how standard forms and procedure may be introduced and maintained, a brief review is offered of the method used by one large corporation that has followed this work consistently for the past several years.

This organization attained its present corporate structure by the merger of holding and operating companies. Because each company had followed a somewhat different accounting system and used a different form of financial statement, the preparation of a consolidated financial statement for the newly formed system, which should be a routine matter, was a major accounting problem requiring a great deal of the time and individual attention of the chief accounting officers. Therefore, one of the first requirements was a standard financial statement that would reflect uniformly the system operations enabling direct comparisons to be made between results obtained by the reporting companies. It was comparatively simply to provide a standard balance sheet and income statement, but it was more difficult to provide for the consolidation of the details of expenses because each of the subsidiary companies maintained its expense accounts in somewhat different form. In order to complete the standardization of the financial statement it was necessary, therefore, to provide a classification of accounts that would prescribe and interpret uniformly the accounts for like operations, and at the same time meet the requirements of the regulatory bodies in the different states in which the companies operated. (The preparation of this classification of accounts is an interesting story in itself, but, of course, it is outside the scope of this article.)

Steps in Standardization

Many standardization programs have stopped at this point, when standard financial reports have been installed and the accounts have been put on a uniform basis. Without minimizing the importance of these steps, it is only proper to point out that they are but the first steps in the standardization of forms and procedure. Consider what lies behind the financial statement. Fixed Capital, for example, is generally reported on the balance sheet as only one or two items, "Property, Plant and Equipment," and "Construction Work in Progress." In the group of companies considered, it was found that over 130 different forms were used in connection with maintaining fixed capital records. Payrolls offer another good example. They do not appear on the balance sheet at all, except as an accrued liability, but 260 different forms were used in keeping payroll records—monthly, semi-monthly, weekly and special payrolls, time reports, etc. Motor transportation does not appear except as a suspended account, if at all, and yet some 200 forms were used in accounting for the fleets of trucks and automobiles used in the operations of the companies. Similar conditions obtained with the other accounting and all operating records.

As a result of a decision to standardize these supplementary or detailed records, and to establish a medium of control of the results previously attained, a Standardization Committee was appointed, composed of senior accounting department employees generally familiar with the organization as a whole and the relationship between the various departments. The first duty of this committee was to determine, by actual survey, the existing situation in order to procure some definite idea of the potential savings and other benefits to be derived. Samples of each form in the various individual companies were assembled, together with related data, such as quantity of the last order, unit price, quality of paper involved, the use of the form and number of copies, etc. The result of this survey disclosed that more than 10,000 different forms were in use, involving some 500 grades of paper.

The next step was the instituting of studies to determine what, in the opinion of the committee, was necessary in the way of form revision, paper requirements, etc. This preliminary study indicated that a reduction in number of forms approximating 75% could be effected through the medium of elimination and standardization, as well as a substantial reduction in the different grades of paper. To expedite this work the committee sectionalized its activities, one section devoting its efforts to form standardization; the other to paper standardization.

The form standardization section segregated the forms into functional classes, such as general accounting, customers' accounting, production, plant, etc., in order to establish an efficient and systematic basis for review. Only one functional group of forms was studied at a time, and new forms were designed which, in the opinion of the committee, would cover the operations involved. In this manner it was possible to complete the standardization of a particular group of forms before proceeding with another.

Analysis of Forms

The committee decided that upon completion of the analysis of each group of forms the proposed revisions would be submitted to the various affiliated companies, and, after allowing time for study, round-table discussions would be held to permit objections, criticisms or further suggestions to be aired in the presence of all concerned. This was deemed advisable as it was recognized that where forms differ, the procedure followed in connection with them is likely to differ also, and that in all probability the procedure in one company might be more efficient, less costly, or have some other advantage over that followed in another; also, because we all become more or less attached to our own way of doing things, and it is sometimes as hard to convince us that the other fellow's way may be better as it is to persuade us that the other fellow's home town is more attractive. That seems to be human nature. The success of the meetings so held exceeded all expectations, and representatives of the various individual companies practically sold themselves on the changes in the knowledge that their comments and ideas had been given full recognition.

The paper standardization section analyzed each form as to its purpose, its active life and its inactive life, and from the results obtained were able to recommend a proper quality of paper for each. After all forms had been so analyzed, annual requirements of the selected grades of paper were determined which enabled arrangements being made with paper manufacturers for quantity purchases.

The advantages of form standardization would be lost unless the forms remain standard. However, they must be responsive to changing needs. If a form is to continue to serve the purpose for which it was designed, it should be reviewed occasionally to see that it is well adapted to present operating conditions and to improvements in accounting technique. To accomplish this the accounting officers and department heads were encouraged to criticize and comment on the forms under their jurisdiction and to submit recommendations for their improvement.

The committee maintains a record of the data that was assembled in the standardizing of each form as well as each suggestion for its revision, and when it is necessary to order a new supply the committee reviews the form together with its record. If meritorious revisions have been received, those interested are consulted, either by correspondence or by conference, regarding the

(Continued on page 323)

COMMERCIAL SECTION

N. T. SELLMAN, Chairman J. W. WEST, Jr., Secretary F. M. ROSENKRANS, Vice-Chairman

More Companies Adopt Cooperative Trade Principles

ON May 2, 1931, the Executive Board of the American Gas Association adopted an official statement of principles for promoting cooperative trade relations between the gas industry and allied trades interested in the sale of domestic gas appliances. This statement was later given wide publicity within the industry and the principles recommended were officially approved by the National Association of Master Plumbers and the National Heating and Piping Contractors Association. They were also recommended to the hardware dealers of the United States by the National Retail Hardware Association wherever the gas company took the initiative in requesting the cooperation of these dealers.

In the Fall of 1932 a survey was made of member gas companies which indicated that 200 companies, serving approximately seven million meters had accepted and were utilizing the Association's statement as a basis for promoting cooperative trade relations.

The second survey has just been completed and shows substantial progress in this field. In the manufactured and mixed gas branch of the industry 194 operating companies serving seven million customers on December 31, 1933, indicated that their sales activities were being conducted in accordance with the Association's recommendations. These 194 companies listed 11,460 cooperating dealer outlets. Ninety-five per cent of the companies cooperated with plumbers, 72 per cent with heating contractors, 61 per cent with furniture stores, 57 per cent with hardware stores, 47 per cent with department stores, and 11 per cent with other stores not classified in the above fields.

The cooperative plans of 96 per cent of the companies applied to water heaters, 81 per cent applied to ranges, 71 per cent to house heating equipment and 69 per cent to gas refrigerators. Forty-three per cent of the manufactured and mixed gas companies reported that they carried dealers appliance paper. The 194 manufactured and mixed gas companies which reported represented 71 per cent of the manufactured gas industry.

In the natural gas branch 102 operating companies serving 3,380,000 customers reported approximately 4,800 cooperating dealer outlets. Ninety-six per cent of the companies reported cooperative plans in effect with local plumbers, 85 per cent with furniture stores, 83 per cent with hardware stores, 81 per cent with heating contractors, 58 per cent with department stores, and 4 per cent with other stores not classified above.

In 97 per cent of the cases the cooperative plans applied to water heaters, 85 per cent to house heating equipment, 75 per cent to ranges and 63 per cent to refrigerators. Twenty-one per cent of the natural gas operating companies reported that they carried their dealers deferred payment paper. The 102 operating companies which responded represent 62 per cent of the natural gas industry of the United States.

Promotion of cooperative trade relations by the gas companies and dealers interested in the sale of gas appliances has been an activity of Executive and Commercial Section Committees of the Association since its formation in 1919. The spread of this movement to companies serving two-thirds of the customers in America is very gratifying to those who have been active in the work of the Association on this subject.

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Refrigeration Contest Awards To Be Made At Convention

GAS companies that won the "blue vase" in the "Go-Getter Contest," the nation-wide gas refrigeration sales contest of the American Gas Association Refrigeration Committee, will be awarded prizes at the forthcoming annual convention of the Association to be held in Atlantic City in October, according to an announcement by Ronald A. Malony, chairman of the committee. The "blue vase" and cash prizes were won by companies making the highest record in their respective divisions.

The winning companies were: The Southern California Gas Company, of Los Angeles, Dallas Gas Company, the Metropolitan Utilities District of Omaha, the Tampa Gas Company, the Tyler Gas Service Company, of Tyler, Texas, and the United Gas Public Service Company of Huntsville, Texas.

In addition to the vases, the six companies above mentioned won cash prizes of $300 each, except in the case of the Southern California Gas Company of Los Angeles which receives $500.

Other cash prizes were awarded to companies which won second, third, fourth and fifth places, the total cash awards amounting to $6,700, twenty-eight utilities in all having received cash prizes. Twenty companies received "honorable mention" for their high record of sales.

Companies that gained second place were: Washington Gas Light Company, Washington, D. C.; New Haven Gas Light Company, New Haven, Conn.; Birmingham Gas Company, Birmingham, Ala.; Utah Gas and Coke Company, Salt Lake City, Utah; Community Natural Gas Company, Eastland, Texas, and Municipal Gas Company, of Ennis, Texas.

Winners of the third prize were: Philadelphia Gas Works Company; Providence Gas Company, Providence, R. I.; Scranton-Spring Brook Water Service Co., Scranton, Pa.; Southern Cities Distributing Co., Shreveport, La.; Municipal Gas Company, Denison, Texas, and the Municipal Gas Company, of Hillsboro, Texas.

Fourth prize winners were: Columbus Gas & Fuel Company, Columbus, Ohio; The Manufacturers Light & Heat Co., Bellevue, Pa.; Ohio Fuel Gas Company, Newark, Ohio; Community Natural Gas Company, Pilot Point, Texas, and the Ohio Fuel Gas Company, of McConnellsville-Malta, Ohio.

Fifth prize winners were: Public Service Electric & Gas Company, Newark, N. J.; Natural Gas Company, Wheeling, W. Va.; North Penn Gas Company, Port Allegany, Pa.; United Gas Public Service Company, Opelousas, La., and Iowa-Nebraska Light & Power Company, of Lincoln, Nebraska.

The cash prizes for companies winning third, fourth and fifth places were $100 each.

Companies receiving honorable mention were: Boston Consolidated Gas Company, Kings Appliance Company, Brooklyn Union Gas Co., Brooklyn Borough Gas Co., Consolidated Gas Company of New York, Milwaukee Gas Light Company, Minneapolis Gas Light Company, Public Service Electric & Gas Company (Jersey City, N. J.), Springfield (Mass.) Gas Light Company, Southern Counties Gas Company (Orange Co.), Santa Ana, Calif., Southern Counties Gas Company, Pomona, Calif., Natural Gas Co., Inc., Monroe, La., Nashville Gas & Heating Co., Nashville, Tenn., Community Natural Gas Co., Sweetwater, Texas, Palestine (Texas) Light, Heat & Power Co., Community Natural Gas Co., Vernon, Texas, Hornell Gas Light Company, Hornell, N. Y., Ohio Fuel Gas Company, Frazeysburg, Ohio, Gas and Electric Appliance Co., Caldwell, Ohio, and Virginia Gas Distributing Company, of Waynesboro, Va.

Prizes of $100 each awarded for high sales records in June went to Boston Consolidated Gas Company, New Haven Gas Light Company, Birmingham Gas Company, North Penn Gas Company, of Allegany, Pa.; Municipal Gas Company, of Denison, Texas, and Municipal Gas Company, of Ennis, Texas.

The awards were based exclusively on installations of Electrolux refrigerators manufactured at Evansville, Indiana, which are marketed by gas utilities in all sections of the country.

In his announcement Mr. Malony said: "The 'blue vase,' adopted as a symbol of success by the Committee, has been awarded only to those companies which stood first among companies of their size in the contest.

"The campaign was called the 'Go-Getter Contest' after Peter B. Kyne's story, 'The Go-Getter.' Mr. Kyne tells of the triumphs of a salesman in overcoming the obstacles in obtaining a certain blue vase for his employer."

Mr. Malony declared that the contest, which was conducted during April, May and June, had met with even greater success than the committee had expected when the campaign was launched, many of the winning companies having far exceeded the quotas which had been set for them under the terms of the contest.

Mr. Malony commented upon the enthusiasm that had prevailed among the thousands of gas salesmen in all parts of the country who participated in the campaign. "Reports from the field," he said, "indicated that the contestants had carried on their activities very much as if the contest had been a game. Credit goes to the sales forces who helped make the campaign a success, but the committee also congratulates managers who conducted the contest as though they were leaders of football or baseball teams. Everything was done to stimulate interest among salesmen to make their company the winner of the 'blue vase.'

"Not only were gas company sales departments alone interested in the success of the campaign, but leading executives of the industry lent whole-hearted support to the activity. The gas refrigerator is now recognized as an important factor in furnishing greater comfort to the homes of America through the use of gas."

Frank Leckie Made Gas Engineer

FRANK LECKIE, son of R. B. Leckie, professor of gas engineering at Purdue University, Lafayette, Indiana, has been appointed gas engineer in the liquefied gas division of the Phillips Petroleum Company. Mr. Leckie took up his new duties Aug. 1, with headquarters at Detroit. Since his graduation from Purdue University in 1933, Mr. Leckie has been with the Autogas Corporation, Chicago, as engineer in charge of research.

Inhalator Approved

The Atmos Inhalator, product of the Bishinger-Koehler Manufacturing Co., Inc., Pittsburgh, Pa., has been approved by the Accident Prevention Committee of the Association. Approval followed careful inspection of the inhalator.

HOME SERVICE COMMITTEE

DOROTHY E. SHANK, Chairman JESSIE McQUEEN, Secretary

British Visitors Impressed by American Home Service

INSPIRED by the American practice of rendering complete service to consumers through the medium of home service departments, the British companies are giving serious consideration to the adoption of similar methods of reaching the woman consumer, according to recent reports.

The delegation, representing The Instituting of Gas Engineers, which visited this country last year to participate in the International Gas Conference and American Gas Association Convention at Chicago and to study American gas practice were much impressed with the work of home service departments in the various companies. In addition to observing closely the operations of individual departments while on their tour of inspection, a number of the British delegates were present at the Home Service Breakfast Conference held in conjunction with the annual convention of the Association.

Commenting editorially on the June meeting of The Institution of Gas Engineers, the *Gas Journal,* London, says:

"It was clear from the Institution papers and discussions that considerable impression had been made on the minds of many of the delegates to America last year by the home service departments of the gas undertakings over there. These are, of course, aimed at helping, and so pleasing, the woman consumer, but, if you consider the matter carefully, this comprises practically the whole of the domestic load. Bachelor gas consumers are a very small proportion of the whole, and even their household affairs are largely ordered by mothers and sisters.

"The home service section idea seems, therefore, a promising line of development in this country, and, even if much has been done in some of the larger or better organized undertakings, a national lead would certainly, in our opinion, be of great value to others. It goes without saying that any general effort will not be worth while unless well done, and on lines suited to the mentality of our country women. In this connection it is well to note that our Industry, if it has been slow in starting in this direction, at least has the advantage of having before it the experiences of others. In addition to the recent opportunity of studying American methods, there are the activities of the Electrical Association for Women which have been there for a number of years for all to study. Gas interests have been rather inclined to overlook, if not to smile at, the activities of this branch of electrical propaganda. Unless the smiles were merely the sneers of the fox when he discovered that the grapes were out of reach, we shall expect an advance on anything of the kind which has been attempted in this country if and when the Gas Industry does embark upon an organized effort to retain and increase the affections of our womenfolk.

"The organizers will have some hard thinking and planning to do, and we trust that individual undertakings which are enthusiastic to make a beginning under guidance will not expect too much all at once from their guides, just as we hope that the latter will not be carried away to move too quickly under the glamour of what has recently been seen in America. Practice there has been built up over a considerable number of years, and it will take a wise woman to sort out what activities will be pleasing to the women here and what will not. As only a small example, we have our grave doubts as to how good old British Mrs. Smith would regard the 'free' use of premise at the gas showrooms for her bridge party if she and her friends had to break off at half-time and swallow any such obvious propaganda as an address by an employee of the undertaking.

"These thoughts are inspired by the obvious enthusiasm for a *cherchez la femme* campaign which has been manifest since the American tour, but beyond this we have a shrewd suspicion that the enthusiasm will, before very long, be crystallized into some shape of activity on the part of the national bodies. The movement when it comes will have our hearty support; we have always stressed the importance of the appeal to women, especially in our junior paper, the 'GAS SALESMAN,' where the 'Woman's Viewpoint' has been a popular feature for four years—and not alone among the women members of the Industry, as we have good cause to know.

"In the organization of Home Service, or whatever name it is to have in this country, there appears to be every opportunity for the exercise of those virtues which are claimed for amalgamation or grouping. Those who are unfortunate enough (or fortunate according to the viewpoint) to be left outside the big corporations will do well to give careful consideration to any suggestions which are made nationally."

Home Service at A. G. A. Convention

THE Home Service Committee is featuring two meetings at the A.G.A. Convention in Atlantic City on Wednesday, October 31.

A Home Service Breakfast at 8:30 A.M. will be held at the Shelburne Hotel. In addition to executive greetings, the program will feature a group of short talks on particular phases of home service activities, to include girl scout classes; home service plays; home service regional meetings; school cooperation; and home demonstrations.

The second home service meeting is announced for the late afternoon at 4:00 P.M., at which time three subject matter discussions will include "Consumers Standards" by Alice Edwards, executive secretary of the American Home Economics Association, who has been the representative of that association in many Washington Code hearings related to women's interests; "Newer Knowledge of Meat Cookery" by Inez Willison, National Live Stock and Meat Board; "New Methods in Laundering" by Faye Hamilton, McCall's Magazine.

Milwaukee Department Has Busy Year

IF anyone is doubtful whether home service reaches the women customers in any gas company, we advise the reading of the following figures from the annual report of the home service department of the Milwaukee Gas Light Company, of which Mrs. Ella Liner Lambert is director.

Milwaukee women are very much interested in foods and lecture demonstrations. Seventy-eight classes were given during the year with an average attendance of 422, giving a total attendance of 32,949. These women met regularly in the large home service auditorium of the gas company, and to reach this auditorium it was necessary for them to pass through the gas company sales floor with its display of equipment.

Special lecture demonstrations and talks were added to the above list, with 67 demonstrations given. The average attendance was 251, making a total of 16,834 women. In this case many of the women, as members of women's clubs, were brought to the gas company office for the first time.

Calls made in the home totaled 12,519. Twelve thousand nine hundred and seventeen telephone calls were listed as well as an equally large number of office callers and interviews.

A large number of recipes, to be exact 1,189,250, were distributed during the year.

INDUSTRIAL GAS SECTION

F. B. JONES, Chairman C. W. BERGHORN, Secretary J. F. QUINN, Vice-Chairman

Gas Industry To Exhibit at National Metal Exposition

AN important display of industrial gas equipment will be made at the National Metal Exposition to be held in the Port Authority Commerce Building, New York, October 1 to 5, inclusive. One entire section comprising about 7,000 sq.ft. has been set aside as the Industrial Gas Section. In this area there will be shown the equipment of eighteen different manufacturers. This display has been arranged by the display and contact committee of the Industrial Gas Section, American Gas Association.

The National Metal Exposition is an annual exhibit of all types of equipment used in the metal trades. It is conducted under the auspices of the American Society for Metals with the cooperation of the American Welding Society, the Institute of Metals Division and the Iron and Steel Division of the American Institute of Metallurgical Engineers, and the Wire Association.

This exposition will occupy the entire floor of the Commerce Building where the Ford Show was held in December, 1933. At the Ford Exposition, 2,298,023 visitors were recorded during eighteen days. The exhibition area in the Commerce Building is called Commerce Hall and covers the entire building running from Fifteenth to Sixteenth Streets, Eighth to Ninth Avenues. It is a new structure with modern facilities for exhibition purposes.

The companies which will exhibit in the Industrial Gas Section are:

American Gas Association (Headquarters' Booth)
American Gas Furnace Company
American Electric Furnace Company
Ensign-Reynolds, Inc.
Gas Machinery Company
Gehnrich Corporation
General Gas Light Company
Chas. A. Hones, Inc.
C. M. Kemp Mfg. Company
Mears-Kane-Ofeldt, Inc.
Lee B. Mettler Company
Monarch Engineering & Mfg. Company
Parker-Kalon Corporation
Partlow Corporation
R-S Products Corporation
Selas Company
Spencer-Turbine Company
Surface-Combustion Company
United American Bosch Corporation

In addition to the regular lines of industrial equipment, there will be shown the latest developments and most up-to-date applications of the use of gas for industrial purposes. It is expected that some of the equipment displayed will show applications of controlled furnace atmospheres.

The gas industry display is made possible through the three-part cooperation of the American Gas Association, individual gas companies and the manufacturers of industrial equipment. This exposition should be a real education to any industrial gas man and all those interested are invited to attend. The American Gas Association will have a booth which may be used as headquarters and a meeting place for the gas industry, manufacturers and others interested in Industrial Gas.

Port Authority Commerce Building, New York, which will be the scene of the National Metal Exposition in October

Savings in Boiler Room Labor Pay for Gas

From the heart of the textile country comes a report by Stuart F. Morgan, superintendent of utilization at the New Bedford Gas and Edison Light Company, telling about the application of gas at the Knowles Loom Reed Works. In this plant reeds are coated with melting pitch, and by installing gas under the pitch kettle it was possible to change the high pressure steam boilers formerly required to supply heat to the pitch kettles over to low pressure.

The other uses for steam did not require high pressure. As a result the savings in boiler room labor alone would pay for the gas consumed.

MANUFACTURERS' SECTION

JOHN A. FRY, Chairman J. SCOTT FOWLER, Vice-Chairman C. W. BERGHORN, Secretary MERRILL N. DAVIS, Vice-Chairman

Manufacturers Plan Outstanding Exhibit

DELEGATES and other visitors to the Sixteenth Annual Convention and Exhibition of the American Gas Association, which will take place at Atlantic City, N. J., October 29 to November 2, will have the opportunity of viewing one of the most complete displays of gas appliances, equipment and accessories ever assembled. Nearly 150 manufacturers from all parts of the country have applied for 93 per cent of the available space. With a number of prospective exhibitors not yet heard from, it is expected that the full amount of space will soon have been allotted.

The exhibit will again be housed in the giant municipal auditorium, one of the largest of its kind in the world. The accompanying diagram shows the exhibition floor plan and the general layout of the main hall.

New developments and improvements in gas-burning appliances have been more numerous and noteworthy in the last three years than in the previous fifteen, according to manufacturers. This fact and the fact that no exhibition has been held in connection with the annual national convention during that period, make conditions even more favorable for an outstanding event.

The revised list of exhibitors follows:

Company — *Space Nos.*

A-B Stove Co., Battle Creek, Michigan 318
Addressograph-Multigraph Corp., Cleveland, Ohio 426
Alcazar Range & Heater Co., Milwaukee, Wis. 410
Air Reduction Sales Co., New York, N. Y. 227
Alpha-Lux Co. Inc., New York, N. Y. 225
American Brass Co., Waterbury, Conn. 509
American Cast Iron Pipe Co., Birmingham, Ala. 106
American Gas Journal, New York, N. Y. 204
American Gas Products Corp., New York, N. Y. 419, 420
American Meter Co., New York, N. Y. 400, 401
American Stove Co., Cleveland, Ohio 406, 407, 408, 409
American Thermometer Co., St. Louis, Mo. 134
Autogas Corporation, Chicago, Illinois 126
Automatic Products Co., Milwaukee, Wis. 519

Bailey Meter Co., Cleveland, Ohio .. 104
Barber Gas Burner Co., Cleveland, Ohio 135
Bartlett Hayward Co., Baltimore, Md. 325
Blodgett Co. Inc., G. S., Burlington, Vt. 516
Bristol Co., Waterbury, Conn. 100
Bryant Heater Co., Cleveland, Ohio 505, 506
Burdett Mfg. Co., Chicago, Ill. 610
Burnham Boiler Corp., Irvington, N. Y. 125
Burroughs Adding Machine Co., Detroit, Mich. 425; 502

Caloric Gas Stove Works, Philadelphia, Pa. 518
Canadian Gas Association-Intercolonial Gas Journal of Canada 634
Carson-Cadillac Corp., Birmingham, Ala. 326
Chace Valve Co., W. M., Detroit, Mich. 517
Chambers Corp., Shelbyville, Ind. ... 611
Chase Brass & Copper Co., Waterbury, Conn. 130
Chaplin-Fulton Mfg. Co., Pittsburgh, Pa. 525
Cleveland Heater Co., Cleveland, Ohio 311
Cleveland Trencher Co., Cleveland, Ohio 632
Connelly Iron Sponge & Governor Co., Elizabeth, N. J. 140
Coxhead Corp., Ralph C., New York, N. Y. 638
Crane Co., Chicago, Ill. 402, 403
Cribben & Sexton Co., Chicago, Ill. 316, 317
Cruse-Kemper Co., Ambler, Pa. 205
Cutler-Hammer Inc., Milwaukee, Wis. 327

Davey Compressor Co., Kent, Ohio 635, 636
Dearborn Chemical Co., Chicago, Ill. 300
Detroit Lubricator Co., Detroit, Mich. 127
Detroit-Michigan Stove Co., Detroit, Mich. 319, 320, 321
Dresser Mfg. Co., S. R., Bradford, Pa. 421, 422

Economy Governor Co., Anderson, Ind. 527
Electrolux Refrigerator Sales Inc., New York, N. Y. ..... Stage
Elliott Addressing Machine Co., Cambridge, Mass. 600
Ensign-Reynolds Inc., New York, N. Y. 520
Estate Stove Co., Hamilton, Ohio 416, 417; 511

Fagan-Andrews Co., Milwaukee, Wis. 116
Floyd-Wells Co., Royersford, Pa. 510

Gas Purifying Materials Co. Inc., Long Island City, N. Y. 528
General Ceramics Co., New York, N. Y. 119
General Coal Co., Philadelphia, Pa.. 137
General Electric Co., New York, N. Y. 515; 616
General Gas Light Co., Kalamazoo, Mich. 523, 524; 607, 608
Glenwood Range Co., Taunton, Mass. 220, 221
Globe American Corp., Kokomo, Ind. 214, 215, 216

Handley Brown Heater Co., Jackson, Mich. 210
Harper Wyman Mfg. Co., Chicago, Ill. 521
Homestead Heater Co., Newark, N. J. 120, 121

Improved Equipment-Russell Engineering Corp., New York, N. Y. ... 230
International Business Machines Corp., New York, N. Y. 427; 500
International Nickel Co. Inc., New York, N. Y. 111-B

Johns-Manville, Inc., New York, N. Y. 630, 631

Kitson Co., Philadelphia, Pa. 637

Lambert Meter Co., Brooklyn, N. Y. 229
Lattimer-Stevens Co., Columbus, Ohio 203
Lavino & Co., E. J., Philadelphia, Pa. 306
Littleford Bros., Cincinnati, Ohio ... 606
Lindemann & Hoverson Co., A. J., Milwaukee, Wis. 410
Lovekin Water Heater Co., Philadelphia, Pa. 418

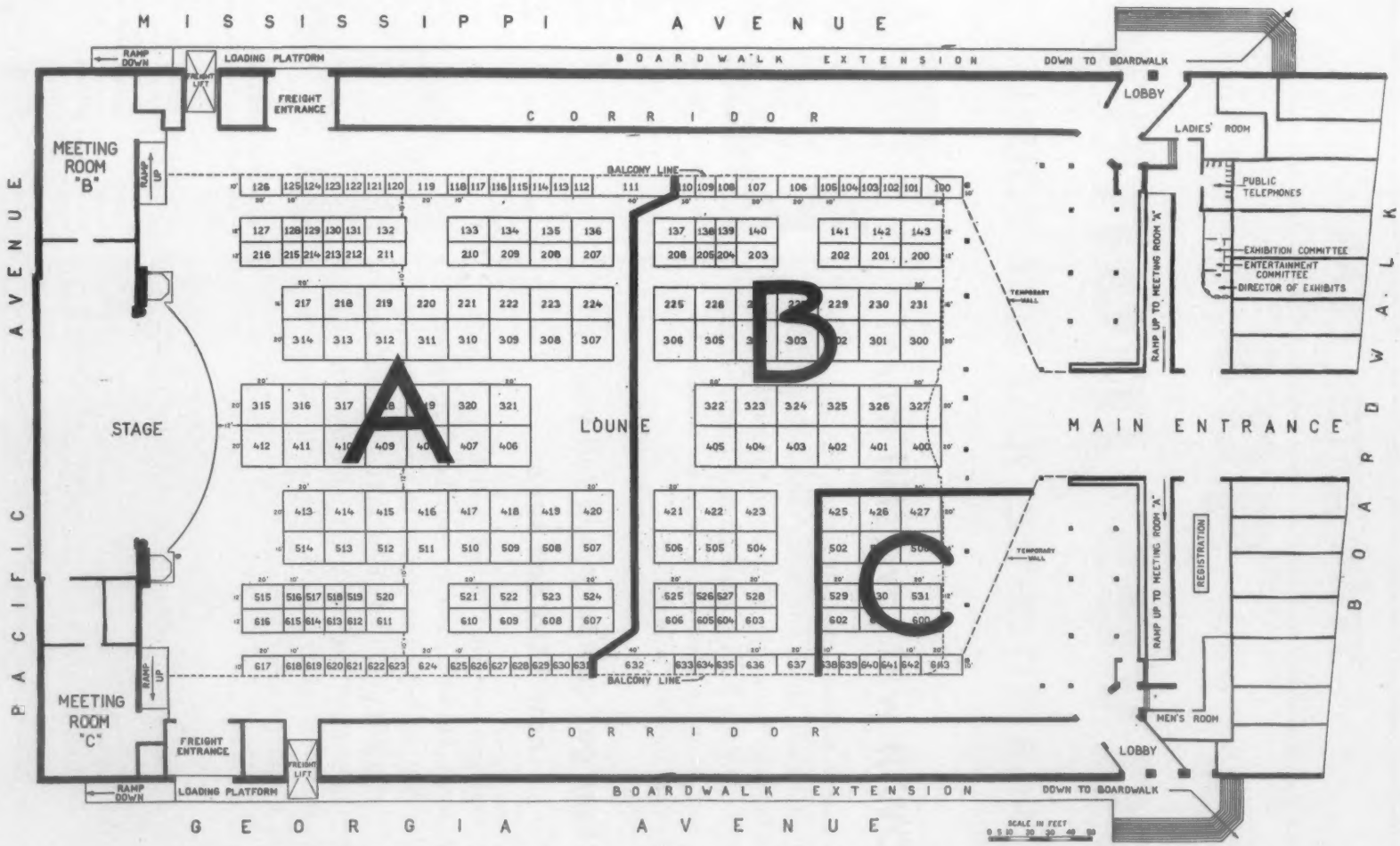
Majestic Mfg. Co., St. Louis, Mo. 177, 118
McWane Cast Iron Pipe Co., Birmingham, Ala. 139
Mears-Kane-Ofeldt Inc., Philadelphia, Pa. 617
Mettler Co., Lee B., Los Angeles, Calif. 209
Milwaukee Gas Speciality Co., Milwaukee, Wis. 211
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn. 413, 414
Moore Corp., Joliet, Ill. 411
Mueller Co., Decatur, Ill. 301
Mulcare Engineering Co. Inc., New York, N. Y. 528

National Cash Register Co., Dayton, Ohio 501
National Radiator Corp., Johnstown, Pa. 131
National Superior Co., Toledo, Ohio 605
National Tube Co., Pittsburgh, Pa. 200, 201, 202
Natural Gas Magazine, Cincinnati, Ohio 604

Patrol Valve Co., Cleveland, Ohio ... 310
Peerless Heater Co., Boyertown, Pa. 624
Peerless Mfg. Corp., Louisville, Ky.. 133

(Continued on page 323)

EXHIBITION FLOOR PLAN



Section A, Reserved for Gas Appliances and Accessories; Section B, for Gas Manufacturing and Distribution Apparatus; Section C, for Office Equipment

Diagram showing general layout of main hall and exhibit space, 93 per cent of which has already been allotted to appliance and equipment manufacturers. Space numbers identify the location of the various manufacturers' exhibits.

YEAR AFTER YEAR
gas
saves money
FOR KITCHENS JUST LIKE YOURS

NOW *it will save still more!*

Cooking-cost studies, made in every city this year, show that leading hotels and restaurants have cut their kitchen costs by replacing old cooking equipment with modern automatic heat-controlled and insulated gas appliances. In many cases the savings are remarkable. In every case they are substantial.

Your gas company will tell you how YOU can save

Phone your gas company today. Ask for a cooking-cost engineer. He will come to your kitchen, make a complete cost survey, and report to you in writing.

This service is absolutely FREE and without any strings. The one purpose of the gas industry is to help you get the most profit possible out of the use of its product. So phone *now!*

TO SPEED UP COOKING . . . Gas is by its very nature the fastest of cooking fuels. For short-order work, in particular, it is speedy beyond comparison. »» And it is *always* speedy—the one fuel that never can cause shut-downs. No working parts to wear away in gas equipment. No delicate connections to get out of order. »» Incidentally, gas appliances cost least to install and least to maintain.

TO REDUCE SHRINKAGE . . . Keep oven-temperature low. Ribs shown above weighed exactly 14 lbs. each before cooking. Rib A, cooked at 500°, lost 5 lbs. 12 oz. Rib B, cooked at 230°, lost only 1 lb. 14 oz. »» Heat control is the one way to reduce shrinkage, no matter what fuel is used. With modern gas equipment you can reduce shrinkage to the absolute minimum.

HOTEL AND RESTAURANT COMMITTEE
AMERICAN GAS ASSOCIATION

Fifth of a series of advertisements prepared by the Hotel and Restaurant Committee, Industrial Gas Section, American Gas Association, as it will appear in hotel and restaurant trade papers.

TECHNICAL SECTION

O. S. HAGERMAN, Chairman H. W. HARTMAN, Secretary C. A. HARRISON, Vice-Chairman

Customer Relations in the Customers Shop Operation

By F. T. PARKS

Manager, Natural Gas Department
Public Service Company of Colorado

IT is easy to hire a good fitter, but it is hard to train a fitter to be a good customer relations man.

I dare say a survey of any city will show more customers are unfriendly toward the gas company because of poor customer relations than all other things combined. If this is true we certainly are not spending enough time and effort on customer relations work.

If an employee's boss believes, practices and teaches proper customer relations, the employee will probably do likewise.

Customer relations work is like time and tide—it goes on and on and waits for no man. The job is never done but each new day gives every employee the chance to make new and better friends for the company.

Our Customers Shop Operation Department has a fine record in customer relations work. Before starting a new fitter out to work in a customer's home, Lee Davis, superintendent of our Customers Shop Department, would very likely talk to the man something like this:

You have passed your physical examination, your application for bond has been approved and you are now in a position to proceed with the necessary training to fit you for the duties of a gas service man and fitter.

We in the Utilization Department have the old slogan to live down; that is, the "Gas man down by the Winegar Works." His days are past. He is rapidly being replaced by a type which is capable of meeting and handling the public. In other words, contact men with pleasing personalities and neat appearances.

As you progress in your work you will take part in conference meetings that are conducted by the men. These conferences are built around what we term our four cardinal points, which are: Public Relations, Safety, Operating and Sales.

Your duties will all be on the customer's premises, which will necessitate intimate contact with our consumers. In other words you are the Public Service Company to those whom you contact. To preserve and promote good relations, you must:

1. Conduct yourself as a gentleman.
2. Perfect the right method of approach, knowing when to go to the front door and when to go to the back door. Never park your truck in the driveway of a customer where you are working, or next door, as he is another customer.
3. Cultivate courtesy, not only to our customers but also to your fellow workers as well. This applies also to driving. You are furnished a truck which is well identified with signs. At each corner and crossing you are indirectly contacting our customers, which contacts either promote or tear down our relations, depending entirely on how you conduct yourself.
4. You must learn the art of diplomacy to the extent that you will talk enough to satisfy the customer, but not so much that you will cause the company to back up on statements which should not have been made.
5. Familiarize yourself with the policies of the company, routine of orders, application of service, etc., insofar as your job requires. This information will be available to you through your immediate superior.

"Safety" is of vital importance in the building up of good public relations. The commodity which we are selling and serving our customers, if not handled safely by you, or if you fail to properly instruct the customer in the safe method of operating his equipment, you not only have torn down our relations, but you have given an unsuspecting customer an instrument which, may cause personal injury, property damage, or other serious results.

"Operation" is the actual execution of your work. All fitters and service men must give a courteous and correct explanation of appliance applications and operation so that the customer may know how to get full benefit of its convenience and use. He should stress the most economical method of using the particular appliances.

During the execution of your work on the customers' premises, it is essential to protect the floors, walls and property from damage or soiling; also, be very careful to clean up any debris caused by you. Always wipe off the equipment and lines on which you have been working.

By concentrating on explanation to the customer on minor adjustments, such as temperature changes, turning on and off house heating jobs, service calls can be materially reduced—and with more customer satisfaction, which in turn builds up good public relations.

The "Sales" side of the job not only ties in with public relations but it is the only method which can be used to make future sales, keep present equipment sold, maintain and increase the existing gas load.

You will be called on from time to time to straighten out misunderstandings which occur between our customers and salesmen in the application and operation of different pieces of equipment. These cases require the utmost diplomacy and careful handling on the part of the fitter or service man so as to keep the job sold and maintain good relations.

Every employee in our department is considered a salesman, not only to sell gas and merchandise, but to sell goodwill toward our company.

Whatever It Costs, It's Too Much

A little story told by L. B. Denning, president of the Lone Star Gas Company, Dallas, Texas, provides an apt illustration of the general attitude of the public toward its utility services.

A short time ago a very estimable lady and a long-time friend of the family was at Mr. Denning's home for dinner. This lady lives in a western Texas city and is a user of natural gas. The city system, however, is not connected with the Lone Star Gas Company.

During the evening the following conversation took place:

"Mr. Denning, I sure wish you folks would come into our town and bring us natural gas." "Haven't you already a company serving natural gas in your city?" "Yes." "Well, isn't the service good?" "Yes, the service is good but the cost is so high." "What is the rate per thousand feet in your city for natural gas?" "I—, I— just really don't know what the rate is."

The lady went on to explain that she used gas for heating and was asked what her cost was. She again hesitated and then replied: "Well, I am not quite sure about that, but I think the biggest month's bill during the coldest weather was something between ten and twelve dollars." "I suppose your husband pays the bills, then." "No, I pay the bills and every time I get a gas bill it makes me burn up."

Extend Plans For Coating Tests

By GEORGE H. BOYD

Chairman, Subcommittee on Pipe Coatings and Corrosion

THE Laboratory Tests of Pipe Coatings, which were outlined in THE MONTHLY for July (p. 244) have been extended slightly in their scope to include tests for cracking at low temperatures and resistance to shock. These tests can be made with very little added effort or expense and they will give the user of coatings a little better idea of what to expect from the tested coatings.

The manufacturers are asked to furnish eight instead of six specimens of each coating. The two additional specimens will be used for determining resistance to low temperature cracking and resistance to shock. In the low temperature cracking test a specimen of each coating will be placed in a refrigerator which has a temperature of about —10° C. for a definite time.

Either a visual examination or the pattern test will be used to determine the condition of the coating after exposure. The shock test will be made by dropping a steel ball weighing 1.65 lb. from heights of one foot, two feet, etc., up to eight feet on the same place on the coated pipe and noting when the coating is knocked off and bare metal is exposed.

Neither of these tests has been used by the National Bureau of Standards for pipe coatings and it may be necessary to modify them. The value of these tests or modifications of them can best be determined by trial. They may be developed into test methods which will be recognized when their value has been established.

The results of the test, when published, will include: (1) manufacturer's name and his description of material or coating; (2) the results of pattern and conductance tests both before and after burial of the specimens; (3) the condition of the pipe at the end of the test, described according to the U. P. P. I. Inspection Code; (4) the results of the moisture absorption tests, the details of which cannot now be stated; (5) the results of the tests for resistance to cracking and shock, provided they appear to be reliable and significant; and (6) any noteworthy observations concerning the appearance or behavior of any coating.

The results, together with any discussion, will be published as soon as practicable after the completion of the test, and after being submitted to cooperating coating manufacturers for their criticism.

Denver Stand-By Plant Again Prevents Service Interruption

A BREAK in the Colorado Interstate Gas Co's. pipe line, July 26, seven miles east of Colorado Springs, caused the Public Service Company of Colorado's stand-by gas plant at Denver to go on the line for the second time in one year. The refractory screen oil process equipment carried the load without effort, and some 8,000,000 cu.ft. of natural gas in storage was released to the Colorado-Wyoming Gas Company which supplies Northern Colorado towns and Cheyenne, Wyo.

Flood conditions, which precipitated a gas emergency last September, were again responsible. Half a dozen sections of 20-inch pipe were undermined in the bed of Sand Creek where a restraining dam—to protect a railroad bridge—caused a lake to be formed and concentrated rushing waters where they would do most damage to the gas conduit.

A Colorado Interstate repair crew, dispatched from Colorado Springs, quickly repaired a minor break; but a second, and then a third, major break complicated matters. A bull-head and 2,100 ft. of bypass constituted the temporary contruction work necessary to restore pipe-line flow. The first interruption occurred at 2 P.M., July 26. Pressure was turned on at 3 P.M., July 27.

During the 25-hour interim, there was no interruption to customers' service. Sufficient natural gas was in the holders at Denver to meet all local requirements and demands of the Colorado-Wyoming Gas Company pull. At 8 A.M., July 27, when it became apparent that repairs would consume more time than originally anticipated, the Denver emergency station began putting manufactured gas into the mains, under the direction of George Wehrle, superintendent.

In the words of Mr. Wehrle: "We just loafed along, making about 300,000 cu.ft. of gas per hour. At no time was it necessary to speed up operations. Everything worked perfectly. After seven hours we went off the line with facilities to continue indefinitely at increased capacity."

Since last September's experience, when the Denver stand-by equipment was called upon to function 42 continuous hours, supplying more gas than had ever been required at that season, improvements have been made. To guard against water shortage, a well was drilled, capable of furnishing 1,000 gal. a minute. This circumstance, coupled with 50-ft. coolers, replacing those 20 ft. high, obviated the hazard of hot gas. Plenty of gas, at proper, uniform temperature was, therefore, continuously available.

Twenty-Five Receive McCarter Medals

TWENTY-FIVE employees of the Consolidated Gas Company and affiliated gas companies in the Metropolitan Area recently were presented with McCarter Medals for the saving of lives by application of the prone pressure method of resuscitation.

On behalf of the American Gas Association, Vice-Presidents W. C. Morris and O. H. Fogg presented medals to the following employees of the Consolidated Gas Company:

Rubin Kownatzky, Joseph Leyrer, William Shaw, Louis Arnheim, Wilson Howard Broughman, Richard Kidd, Charles William Krause, Cornelius Marrinan, Thomas A. Roseingrave and Frank Francis Yostpille.

R. A. Carter, Jr., vice-president, presented the medals to the following employees of the Astoria Light Heat & Power Co.:

Olov Gehre, Frank Lenane, William McMahon and Frank A. Rebscher.

W. G. Hoyt, president, presented the McCarter awards to the following employees of the East River Gas Co.:

Michael Fitzpatrick, Frederick Heiselman, Anthony Henry Maus and John Joseph Seizinger.

F. R. Barnitz, president, made the awards to the following employees of the Northern Union Gas Co.:

Philip Botticelle, Albert Brown, John Burwick, Theodore Cowdrick, Samuel Guido, John Rovet and Walter Scott.

A. S. T. M. Elects New Officers

WILLIAM H. BASSETT, The American Brass Company, Waterbury, Conn., has been elected president of the American Society for Testing Materials for 1934-1935. A member of the A. S. T. M. since 1903, he has been very active in its work, particularly in the non-ferrous field.

Mr. Bassett was a member of the Executive Committee, 1916-1918; and was vice-president of the A. S. T. M., 1932-1934. He also holds membership in a large number of engineering and technical societies, is a past-president of the American Institute of Mining and Metallurgical Engineers and a former director of the American Institute of Chemical Engineers.

H. S. Vassar, Public Service Electric and Gas Company, Irvington, N. J., was chosen vice-president. H. A. Anderson, Western Electric Company (Hawthorne Works); W. M. Barr, Union Pacific Railroad Company; L. S. March, manager, Department of Inspection and Metallurgy, Inland Steel Company; and J. B. Rather, Socony-Vacuum Corporation, were elected members of the executive committee for the two-year term.

TESTING LABORATORY

R. M. CONNER, Director Managing Committee: J. S. DeHART, Jr., Chairman N. T. SELLMAN, Secretary

Gas Range Broiler Ratings Investigated

ACTING at the request of the Subcommittee on Approval Requirements for Gas Ranges, the A.G.A. Testing Laboratory has for some time been investigating the temperatures developed on the grilles of various gas range broilers with the broiler burners operating at different inputs and for different periods of time. As a result much information has been obtained which gives promise of forming the basis for a requirement to be incorporated in the American Standard Approval Requirements for Gas Ranges covering the effectiveness of broilers in the cooking operations for which they are commonly used.

Due to recent revision in the gas range standards, manufacturers are now permitted to specify their own input ratings to burners, and are thereby allowed greater latitude in exercising ingenuity of design and construction. Under this plan, obviously, requirements must be included which insure ample outputs and effective heating with each of the various burners on a range. Such a requirement for gas range broiler burners complete from all aspects, however, does not yet exist; the only broiler performance requirement included covers the distribution of heat over the broiler area. The research just completed at the Laboratory was, therefore, designed to establish some index of broiling effectiveness at various broiler heat input ratings.

In the research conducted, ranges of various sizes and descriptions were operated in a normal manner while the temperatures on the broiler grate at various points were being continuously recorded by means of thermocouples and recording potentiometers. It was found that considerable differences in grilled temperature were observed when bare thermocouples, thermocouples welded to one-inch discs of bright copper, and thermocouples welded to one-inch discs of copper covered with dull black paint were used. This indicated that a considerable portion of the heat transferred to foods placed on broiler grilles was transmitted by radiation, and, therefore, that any method used for stipulating the temperatures attained should require the determination of grille temperatures in such a manner that both the radiated and convected components of the heat reaching the food being cooked were taken into consideration.

As a result, the thermocouple pads shown in the accompanying figure on the broiler rack of the range under test were adopted as standard for measuring broiling temperatures. They consist of iron-constantan thermocouple junctions welded to blackened copper discs one inch in diameter which, in turn, are mounted on black asbestos pads three inches square and three-eighths inch thick.

In view of the fact that the temperature readings obtained varied with the distance between the thermocouple and the burner ports as well as with the placement of the thermal pad on the grille, a standard method of test had to be set up in order that comparable test results could be secured on different broilers. It was finally decided that most indicative results were secured when the distance between ports and thermocouple was fixed at two inches and five pads were used simultaneously to indicate temperatures.

One pad was placed at each of the four corners of the broiler rack and one directly in the center. The temperature indicated by each was observed periodically as the boiler of the range under test was heated from a cold start to equilibrium conditions. In all investigations, the thermostat on the broiler burner, if one was provided, was externally fixed to remain open under all conditions, thus avoiding any cutting down of burner inputs as heating proceeded and simulating operation with oven doors partially opened.

The data obtained on ten different ranges showed that the rack temperatures developed by different burners operating at the same rating varied considerably; and, therefore, that to attain any given minimum broiling temperature in a certain time, different broilers would have to be rated for considerably different consumptions. The data also showed that the method employed for measuring rack temperatures yielded information truly indicative of comparative broiling effectiveness. It is hoped that on the basis of this research a standard may be devised and put into effect which will assure sufficient broiler burner capacity and, in conjunction with existing broiler unit requirements, guarantee acceptable and effective operation of the broilers of approved gas ranges under all conditions.

View of equipment used in study of broiler rack temperatures and broiler ratings

Testing of Gas Pressure Regulators

THE new Listing Requirements for Gas Appliance Pressure Regulators were completed in June. Manufacturers of such equipment may, therefore, now submit their regulators to the Testing Laboratory for tests and listing. Manufacturers whose equipment is tested and found to comply with the requirements will be granted a certificate of listing and the right to affix the Laboratory's Listing Symbol to their regulators. The Listing Symbol comprises the letters "A.G.A." Details regarding the marking of regulators will be found in the regulator standards and in the "A.G.A. Requirements for Official Marking of Approved Gas Appliances and Appurtenances, and Listed Accessories."

A reproduction of the Laboratory's new "Certificate of Listing" is shown below.

Copies of the Listing Requirements for Gas Appliance Pressure Regulators and the requirements for official marking, as well as information regarding test procedures, may be secured upon application to the Director of the American Gas Association Testing Laboratory, 1032 East 62nd Street, Cleveland, Ohio.

AMERICAN GAS ASSOCIATION INC.

TESTING LABORATORY

CERTIFICATE OF LISTING

No._____ Date_____

Type of Accessory or Device _____

Trade Name _____

Number _____

Manufacturer _____

This certifies that the herein described accessory (ies) or device (s) has been tested by the American Gas Association, Inc., Testing Laboratory and found to comply with the listing requirements of the American Gas Association. This Certificate of Listing covering accessories or devices designated herein shall be effective only for the balance of the calendar year appearing above and is subject to all the terms and conditions of the "Application for Approval or Listing" signed by the manufacturer, whose name appears above. It may be renewed in accordance with the terms and conditions of said application, subject to the endorsement of an American Gas Association inspector, and for the period of time specified by such endorsement, as hereinafter provided. This Certificate shall be construed as applying only to the type of accessory or device designated by said manufacturers' name or trademark, and number, constructed exactly as set forth herein and further identified by the American Gas Association's Laboratory Listing Symbol, and is not assignable.

Signed_____
Director, Testing Laboratory

Accessories or devices described herein inspected and listing renewed under the same terms and conditions, for one year from following date:

Date_____ Inspector_____

Date_____ Inspector_____

Date_____ Inspector_____

Date_____ Inspector_____

Date_____ Inspector_____

ALEXANDER FORWARD
Managing Director

Note: Non-transferable or assignable. Revocable if any attempt is made to transfer or assign it or to apply this listing to any other type of construction than that set forth herein.

(See Description on Back)

Revised Publications

SO frequent have been requests throughout the past year for certain standard A. G. A. Laboratory publications that supplies have been exhausted. Widespread interest in the subjects involved has continued to be evidenced, and the Laboratory has deemed it worth while to order reprintings. As a result new revised forms of the following illustrated booklets are now available to anyone interested in securing them:

"A Trip Through the A. G. A. Testing Laboratory."

"Sampling Products of Combustion from Gas Appliances"—F. E. Vandaveer.

"Safety from the Hazard of Fire with Gas Appliances"—F. E. Vandaveer.

"Radiant Heat from Radiant Heaters, and Its Measurement"—F. E. Vandaveer.

"Determination of Pressure Drop Through Gas Fittings and Controls on Gas Appliances"—J. Corsiglia and R. C. Gregg.

Each of these publications has been carefully re-edited to bring every item up-to-date, and printed in quantities sufficient to meet anticipated demands. Their availability in modern booklet form should be welcome to many. Copies may be secured by application to the American Gas Association Headquarters, 420 Lexington Avenue, New York, N. Y., the A.G.A. Testing Laboratory, 1032 East 62nd Street, Cleveland, Ohio, or the A. G. A. Testing Laboratory, Pacific Coast Branch, 718 Towne Avenue, Los Angeles, California.

To Test Conversion Burners

IT is no longer necessary to gamble in selecting conversion burners. Standards incorporating laboratory tests covering the design, construction and performance of such equipment are now available.

Conversion burners are tested in standard coal boilers at the A.G.A. Testing Laboratory and subjected to practically all tests applied to a complete gas designed boiler.

Coupled with the laboratory tests for design, construction and performance, the Association has provided comprehensive installation requirements, approved as American Standard by the American Standards Association for such equipment.

The Laboratory listing requirements will insure the selection of safer, better designed, and more acceptably operating burners, while the installation standards, which include tests after the equipment is installed, will if followed, provide for a degree of safety, efficiency, and satisfactory performance which should greatly enhance the general acceptability of such equipment for house heating purposes.

Years of work and large sums of money have been expended in the development of these standards. The industry will be able to capitalize on this investment only to the extent these standards are applied.

Testing and certification of conversion burners by the A.G.A. Testing Laboratory should eliminate a large amount of testing work on the part of utility companies. It should assist conversion manufacturers, as it has producers of complete gas appliances, in the development and production of better equipment. It should assist in overcoming competition with oil and other fuels. Service troubles and complaints should be reduced and the acceptability of this type of heating equipment, coupled with the good will created for our industry, should more than justify the testing of such equipment. Furthermore, the public should be greatly benefited by securing conversion burners tested and certified according to nationally recognized and accepted standards.

Gas Cocks Tested By A.G.A. Laboratory

ATTENTION is called to the expansion of the A.G.A. Laboratory's testing and certification program to include gas burner valves and other types of gas appliance accessories. Standards for gas burner valves applying not only to gas cocks of the plug and barrel type, but also to flat-faced or rotor-disc types, were recently completed by the Association. Manufacturers of such equipment may now submit their products to the Laboratory directly for tests and certification.

Heretofore it has been possible for accessory manufacturers to secure only secondary recognition of their products by the A.G.A. through submission of such equipment for test as a part of a complete gas appliance tested for approval. In 1930 the Gas Appliance Manufacturers' Association recommended that separate standards for all types of accessories be prepared and that a system of testing and certification similar to that applied to appliances be worked out. Such a program was, consequently, undertaken which has culminated in the preparation of detailed construction and performance standards for gas cocks and other types of accessories.

These requirements are the first complete standards for such equipment ever developed. Their preparation has involved extensive research and investigation on the part of the Laboratory extending over a period of more than three years. The various requirements committees have been tireless in their efforts to develop complete, equitable, and nationally acceptable standards. It is gratifying to know that the efforts expended are about to bear fruit for the betterment of the industry through the submission of gas cocks and other accessories to the Laboratory for certification.

The testing and certification of gas burner valves should greatly benefit manufacturers in the merchandising of their equipment. It should also serve to encourage the development of better products, do away with a large amount of duplicate testing, eliminate considerable manufacturing waste, decrease service troubles, and through standardization of threads, dimensions, and many other features, render a valuable service to both producers and consumers.

This program should also be of great value to gas appliance manufacturers through enabling them to purchase accessories which have been tested and certified for construction, durability, capacity, and performance. Furthermore, gas appliances equipped with listed accessories will not need to be subjected to requirements for such accessories contained in the approval requirements except in such cases as are not covered by the listing standards. This should eliminate many tests on the appliance and expedite the granting of approval on such equipment.

Tests To Insure Correctly Designed Draft Hoods

PROPER protection of vented gas appliances from chimney drafts and blocked flue conditions is essential. This protection can be easily and cheaply secured by the use of a properly designed draft hood.

Requirements for equipment of this type, approved as American Standard by the American Standards Association, have been available for some time. The Testing Laboratories of the American Gas Association are in position to test and certify such accessories.

Gas appliances are tested and approved in the Laboratory without flue connections. They are required to have incorporated in them natural provisions for proper venting. This does not mean that the appliances when installed in service should not be flue connected. On the contrary, many types and classes are required by the A.G.A. Installation Standards to be flue connected. It does mean, however, that when appliances are installed that they should be isolated from adverse chimney effects and not subjected to up-drafts, down-drafts or blocked flue conditions which will either decrease their safety or efficiency, or both, if not make their operation definitely hazardous.

The performance of a draft hood cannot be judged by a superficial inspection. Its satisfactory operation can only be determined by proper scientific tests accurately performed. A draft hood which may protect an appliance against up-drafts may be practically useless insofar as down-drafts are concerned, or vice versa. Furthermore, a draft hood which performs these functions satisfactorily may allow a large percentage of the flue gases to discharge into the room during normal operation, a condition which is not desirable. In addition, a blocked flue condition may cause unsatisfactory, or even hazardous appliance performance with a draft hood capable of meeting the previously mentioned conditions.

The American Gas Association, through its committees and Laboratory, spent years in developing comprehensive construction and performance standards for draft hoods. The Testing Laboratory is equipped to test such equipment. Therefore, there seems to be no good reason now for not having certified types of equipment for use in meeting the problems encountered in insuring adequate draft protection.

Gas Refrigeration Approval Standards

THE approval standards for gas refrigerators were recently completed in final form and the Testing Laboratory is now in position to test such appliances.

It is believed that the gas industry should avail itself of the opportunity of capitalizing on this advantage of offering to the public the only mechanical refrigerator on the market complying with complete and nationally accepted standards.

The Association's approval requirements are the first complete construction and performance standards ever published for mechanical refrigerators. They are endorsed by the U. S. Bureau of Home Economics and the American Home Economics Association, through their representation on the American Standards Association Sectional Committee, Project Z21, which developed them, and incorporate specifications for practically all of the features recommended by those organizations as desirable in mechanical refrigerators. Every feature from ease of cleaning to refrigerating capacity is covered by these requirements.

It is gratifying to note that whereas the Government has only recently taken steps toward the standardization of customer goods, the gas industry has for years on its own initiative been actively engaged in such a program covering its own products. So effective has this program been that at present over 90 per cent of the domestic gas appliances merchandised in the United States and Canada bear the significant Laboratory Seal of Approval, the insignia of a great industry, and a guarantee of compliance with nationally recognized and published standards for safety, durability, construction and performance.

Industrial Gas Boilers To Be Tested

APPROVAL standards for industrial gas boilers were completed early this year. The Association's Testing Laboratory is now in position to test such equipment for approval. The industry can and should not only capitalize on the money and time spent in drafting such requirements, but should reap the benefits of better service by merchandising only boilers meeting these approval standards.

Fortunately our industry, as has been proven amply by the inauguration of its testing and certification program, recognizes the advantages of merchandising and installing properly designed safe and efficient industrial gas boilers complying with nationally recognized standards. It is certain that our people will take advantage of this further opportunity which has been afforded them to increase good will which is so essential to the success of any business.

Monthly Summary of Gas Company Statistics

For Month of June, 1934

Issued August, 1934, by the Statistical Department of the American Gas Association
420 Lexington Avenue, New York, N. Y.

PAUL RYAN, Chief Statistician

COMPARATIVE DATA ON THE MANUFACTURED AND NATURAL GAS INDUSTRY FOR THE MONTH OF JUNE

	Month of June			Six Months Ending June 30		
	1934	1933	Per Cent Change	1934	1933	Per Cent Change
Customers						
Domestic (Including House Heating)	14,751,600	14,407,800	+ 2.4			
Industrial and Commercial	735,800	715,700	+ 2.8	*See June*		
Total	15,487,400	15,123,500	+ 2.4			
Revenue (Dollars)						
Domestic (Including House Heating)	37,552,500	38,041,500	— 1.3	282,022,300	283,572,800	— 0.5
Industrial and Commercial	14,818,400	12,921,800	+14.7	96,675,000	83,901,500	+15.2
Total	52,370,900	50,963,300	+ 2.8	378,697,300	367,474,300	+ 3.1

COMPARATIVE DATA ON THE MANUFACTURED GAS INDUSTRY FOR THE MONTH OF JUNE

Customers						
Domestic	9,461,400	9,329,100	+ 1.4			
House Heating	91,300	50,500	+80.8			
Industrial and Commercial	440,800	434,600	+ 1.4	*See June*		
Miscellaneous	10,100	10,300	—			
Total	10,003,600	9,824,500	+ 1.8			
Gas Sales (MCF)						
Domestic	20,440,600	20,583,900	— 0.7	125,318,600	125,891,700	— 0.5
House Heating	669,900	437,200	+53.2	19,665,600	13,174,100	+49.3
Industrial and Commercial	7,404,200	6,216,100	+19.1	45,009,700	36,644,500	+22.8
Miscellaneous	142,700	140,300	—	1,108,000	1,078,900	—
Total	28,657,400	27,377,500	+ 4.7	191,101,900	176,789,200	+ 8.1
Revenue (Dollars)						
Domestic	25,161,900	25,460,600	— 1.2	151,318,100	153,423,200	— 1.4
House Heating	540,000	358,400	+50.7	12,754,600	9,432,800	+35.2
Industrial and Commercial	5,549,300	5,270,500	+ 5.3	34,918,100	32,781,400	+ 6.5
Miscellaneous	99,400	110,900	—	791,600	824,600	—
Total	31,350,600	31,200,400	+ 0.5	199,782,400	196,462,000	+ 1.7

COMPARATIVE DATA ON THE NATURAL GAS INDUSTRY FOR THE MONTH OF JUNE

Customers						
Domestic (Including House Heating)	5,198,900	5,028,200	+ 3.4			
Commercial	260,100	248,100	+ 4.8			
Industrial	23,100	21,200	+ 9.0	*See June*		
Miscellaneous	1,700	1,500	—			
Total	5,483,800	5,299,000	+ 3.5			
Gas Sales (MCF)						
Domestic (Including House Heating)	15,105,600	15,282,700	— 1.2	181,522,400	183,613,400	— 1.1
Commercial	2,703,300	2,595,800	+ 4.1	33,561,600	32,242,500	+ 4.1
Industrial	47,820,000	38,007,600	+25.8	280,258,900	216,989,900	+29.2
Miscellaneous	880,200	566,700	—	6,113,900	4,068,400	—
Total	66,509,100	56,452,800	+17.8	501,456,800	436,914,200	+14.8
Revenue (Dollars)						
Domestic (Including House Heating)	11,850,600	12,222,500	— 3.0	117,949,600	120,716,800	— 2.3
Commercial	1,391,800	1,340,800	+ 3.8	14,879,200	14,529,000	+ 2.4
Industrial	7,643,600	6,100,300	+25.3	45,086,400	35,031,600	+28.7
Miscellaneous	134,300	99,300	—	999,700	734,900	—
Total	21,020,300	19,762,900	+ 6.4	178,914,900	171,012,300	+ 4.6

Gas Companies Gain 360,000 Customers in First Half Year

ON June 30, the number of domestic customers served by manufactured and natural gas companies totalled 14,751,600. This was an increase of 360,000 domestic customers during the six-month interval.

This gain in customers is reflected in the fact that a total of 425,000 gas ranges were sold in the country during the first half of 1934. This was an increase of 42 per cent in range sales over the first six months of 1933. Approximately 70 per cent of such sales consisted of relatively high priced ranges incorporating modern automatic features, such as oven-heat control, etc.

Revenues of manufactured and natural gas utilities aggregated $378,697,300 for the first six months of 1934. This was an increase of 3.1 per cent over the corresponding period of 1933. Revenues from industrial and commercial users increased more than 15 per cent. Revenues from domestic customers however was practically unchanged.

Manufactured gas industry revenues totalled $199,782,400 for the first six months, a gain of 1.7 per cent. Revenues from industrial and commercial uses of manufactured gas gained 6.5 per cent. Revenues from domestic uses, such as cooking, water heating, refrigeration, etc. were 1.4 per cent less than for the corresponding period of 1933.

A somewhat similar situation was reflected in the reports of the natural gas companies. Total revenues for the six months amounted to $178,914,900, a gain of 4.6 per cent over a year ago. Revenues from industrial uses aggregated $45,086,400, representing an increase of 28.7 per cent. Revenues from domestic users of natural gas however registered a loss of 2.3 per cent.

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FORD MOTOR COMPANY

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purposes and three rows of forgings are pushed through at the same time. Temperatures close to 1650 degrees F., depending upon the class of work, are maintained with four gas burners on each side. The heating period is regulated through the length and frequency of the pusher stroke.

For a time there were a number of forge furnaces in which this heat was derived from electric elements, but practically all of these have been converted to gas.

RANGE PILOTS

(Continued from page 298)

broiler pilot outage, without drafts, by simply closing or opening doors in the normal manner. These modifications, together with other recommended revisions to the present requirements for gas ranges, were recently published and distributed to all member companies of the Association for comment.

FORM STANDARDIZATION

(Continued from page 309)

desirability of the proposed changes and full consideration given to the various views expressed.

Centralized printing, while not an essential feature to the standardization of forms, is, however, a material aid in maintaining standardization since it affords a medium for positive control. Recognizing the desirability of and the potential savings accruing from centralized printing, it was decided to organize a department for this purpose. The decision to establish this department received substantial encouragement from the results previously obtained by an experiment with printing and addressing customers' bills. This work was transferred to a central point and operated by a department which purchased the necessary equipment and supplies to print and address customers' bills, which are then forwarded to the various companies for billing. This centralized operation reduced the cost of addressed billheads by approximately 50% and, naturally, directed attention to the savings to be realized by central printing of other forms.

From the methods outlined and the results obtained, the Committee hopes to retain the advantages already derived as well as to make permanent those which may be expected to accrue from the continued prosecution of this work.

Personnel Service

SERVICES OFFERED

Gas engineer technical graduate. Fourteen years' experience in water gas production, distribution, engineering and construction. Design, installation and operation of medium and low pressure distribution systems and high pressure transmission lines. Experienced in heavy oil operation and can produce low production costs. **875.**

Sales representative eighteen years' experience, eight selling, desires position to specialize in the sale of automatic gas water heaters, gas refrigeration, or hotel equipment, gas company or manufacturer; have own car. Married (38). **876.**

Gas engineer, technical graduate, N. Y. State Engr. License, post-graduate work in utility economics and accounting. Six years broad practical experience covering manufacture of oven, retort, and water gas—utilization—construction—customer's service—and high and low pressure distribution. Desire an executive position with small company. Will go anywhere. Married. (28). **877.**

Industrial gas sales engineer, six years' experience, large Eastern combination company, sales, installation and service of varied industrial applications, bake ovens, boilers, furnaces, etc. Familiar with all competitive fuels, preparation of estimates, cost surveys, and economical rate determinations. University graduate, 34, married. **878.**

Experienced and proven **sales manager** and salesman, who has successfully established steady, volume sales to Eastern and midwestern gas companies, wants to act as distributor in these territories for one or two quality lines of reliable manufacturers. Particularly for appliances, engineering specialties or gas distribution materials. **879.**

Experienced man, thorough knowledge installation and operation of **Property Accounting** methods constituting perpetual inventory. Familiar with requirements Uniform System of Accounts ré fixed capital in utility property in New York, well versed in special reports, exhibits and statistical compilation for rate making. **880.**

Sales engineer (36) married; two years erection and sales for large manufacturer industrial furnaces; four years supervisor of industrial, commercial and house heating for large eastern utility company and four years with world's largest air conditioning manufacturer, invites correspondence and investigation of gas company officials desirous of obtaining new business. **881.**

Manufacturer's distributor, gas ranges and appliances, New Jersey, New York and Pennsylvania; wide experience in sales among utilities, leading department stores, stove jobbers, plumbers, and builders. **882.**

Manager, superintendent or **engineer** with unusually varied experience in operating and management covering coal, water and oil gas. Reforming of natural gas. Mixed and straight natural gas distribution changeover. Aggressive. **883.**

Gas service engineer experienced on construction, steel or cast-iron pipe, distribution systems or transmission line, regulator and meter stations. Also domestic and industrial appliance installations. Natural or manufactured gas. **884.**

Salesman, stoves, furnaces, boilers and radiation. Over twenty-five years' experience, all general office details, credits, collections, sales promotion, sales customers claims and traffic. Wide acquaintance among furniture, hardware and department store trade in Northern Ohio and Michigan; also specialist in warm air heating. **885.**

Man (47) with wide experience as a public utility **manager,** gas, electric, water and sewer, desires job as manager of fair-sized company or group of smaller companies. Engineering, supervising and managing since 1910. **886.**

Gas engineer (39). Recently manager of small company. Experienced water gas and coke oven operator. Fifteen years' experience in natural gas measurement, distribution and industrial uses, in public relations, rate structures and promotion and sale of all types of gas appliances. **887.**

SERVICES OFFERED

Manager for medium sized gas property, familiar with manufacture of coal and water gas. Experience with natural gas distribution and utilization. Excellent record as merchandiser. Salary secondary. **888.**

Technically trained **engineer** with adequate experience in operation, valuation, expert testimony, trade relations, customer relations, employee information, technical and statistical studies, and house organ publication. Gas and electric experience under most thorough state regulation. **889.**

Appliance sales, sales promotion and new business **manager** with utility or live dealer organization. Understand gas and electric ranges, water heaters and small appliances. Know how to supervise cooking schools, location, Southern States preferred. **890.**

Accountant-Statistician. Twelve years' broad experience with large gas company in costs, analysis, statistics, rate case preparation, office organization, financial statements, branch office audits, accounting forms, and procedures. University trained. **891.**

Manager-engineer; thirty years' experience design and construction of plants, distribution systems and transmission lines. Organization, operation, management, sales, engineering, valuations, coal water and natural gas, also electricity. Recent experience with heavy oil for water gas and high b.t.u. gas to supplement natural gas. **892.**

District regulator repairman, expert on all makes. Seven years in present position, wish to make a change, will go anywhere, married. **893.**

Gas Engineer, experienced in manufacture, application of gas meters, all types, controls and regulation; gas plant operation and maintenance experience; also, utility management training with nationally known engineering firm. Desires position as asst. engineer or asst. superintendent of measurement, distribution—married (30). Free to locate. Natural Gas preferred. **894.**

Successful **Industrial Gas Engineer** desires position where a large potential market awaits progressive efforts and where results will be rewarded. Twenty-three years' experience Natural and Manufactured gas. Thorough knowledge all phases industrial applications, from steam boiler to steel mills. **895.**

Mechanical Engineer, college graduate, 8 years' experience H. P. and L. P. distribution, water and coal gas production, appliance servicing, natural gas changeover. Desires position as superintendent or manager. Married. Location immaterial. Available immediately. **896.**

Industrial Sales Engineer desires employment with Eastern Utility. Specialized in Sales Management, Service and Maintenance of House Heating Department, Industrial Steam Boilers and Large Volume Water Heating. Broad general and technical experience. Married. **897.**

Engineer, now employed offers manufacturer or utility benefits of ten years' experience in all phases of heating and air-conditioning; designing, manufacturing, patents, etc. Background of 7 years in technical college faculty, national society committee activities, writing, and speaking; with high professional standing and wide acquaintance in the industry. **898.**

Gas Engineer and **Manager** (45) University graduate, twenty-three years in executive position, including coal, ovenwater and natural gas, high and low pressure distribution, pipe line design, natural gas conversion work, house heating, industrial sales and all other branches of the gas industry in both large and small situations. **899.**

You'll like this man. His natural flair for selling is seasoned by 11 years' honest, intensive work. Harvard graduate; salesman, 6 years; advertising agency executive, 2 years; utility advertising manager, 2 years; manager newspaper chain, one year. Can cooperate. Can get results. Wants **sales** or **advertising** position with future. **900.**

SERVICES OFFERED

Personnel Director with emphasis on education. Have had 10 years' experience in one of the largest gas and electric utility companies in the United States. Leadership in education in the public utility field established and recognized at home and abroad. The same standard can be set again with low overhead. **901.**

Commercial Manager with tact, vision, creativeness, resourcefulness and "punch"; unusually successful record as load builder; broad experience with progressive organizations U. S. and Canada supervising domestic and industrial sales, developing economies, analysing and allocating costs, designing rates, handling advertising, publicity, franchises, State Commission and public relations. Expert negotiator; highest credentials. **902.**

Sales Engineer, one of the pioneers of gas House-heating sales with a background of gas plant operation. Have also had industrial sales, summer air conditioning, sales promotion and dealer relations experience. Prefer eastern states. Married. **903.**

Experienced gas **appliance salesman** (28), married, with good education, is desirous of locating with a public utility as sales supervisor or as district representative for a manufacturer. Have had experience in both ends. Prefer eastern states, but will go anywhere. Can furnish best of references. **904.**

Young energetic, **technical graduate** (29) (B. S. and M. S. in Mech. Engr.) with four years' utilization, distribution and construction experience with large natural gas system; married. **905.**

Sales Manager and **Salesman** wants responsible selling job. 12 years' successful selling, sales promotion and advertising with speciality manufacturers. County-wide contacts leading jobbers and gas companies. Familiar with fittings, plumbing and heating appliances. College man in prime, clean record, energetic, eager, resourceful, accustomed to large volume business. Compensation open. **906.**

Experienced **Sales Representative** (36). Past eight years experience as representative in the metropolitan area of the two largest range manufacturers, including special promotional work as assistant director of sales education; good record and contacts. Desires connection with reputable manufacturer of appliances and equipment or as commercial manager of a utility company. **907.**

Experienced **gas range** engineering executive wishes to affiliate with reliable manufacturer. Capable of taking complete charge of design and experimental, laboratory departments, factory methods and correcting production problems. **908.**

Utilization and **Sales Engineer** acquainted with Gas Companies, Heating Engineers, Architects, Builders and Plumbers in metropolitan area. Long experience in housheating, waterheating, industrial and restaurant appliances. Is qualified to head a department for a gas company or would represent a manufacturer in New York City. **909.**

POSITIONS OPEN

Manufacturer of well-known line of automatic temperature, pressure and flow controls used for domestic, commercial and industrial purposes is desirous of obtaining **Manufacturer Distributors** in a number of eastern and mid-western states. Prefer man or organization who is control minded and contacts public utilities and heating contractors through his territory. Must have best references. Straight commission basis. **0275.**

A manufacturer of one of America's finest and most complete lines of automatic water heaters doing an exceptional business in all territories covered is desirous of increasing **field representation,** preferably among representatives selling utilities now carrying other non-competitive lines. These water heaters offer manufacturers maintaining sales organizations an opportunity to bolster the earnings of their men with little or no effort detracted from present line. Increased commission builds morale and makes it possible to put forth effort in territories where single lines may not justify. **0277.**

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